# TAPC F1664/30/32/35/43

# TAPC F1667/32/43

Service
Service
Service

**For Servicing Information as regard to the:**
**-Cassette mechanisms refer to Service Manual "Tape Transport RT76, "Tape Transports RT74".**
**-Record Player refer to service Manual "Record player Q510AR".**
**-Loudspeakers refer to 70FB152/11R for F1664/30/35**
**70FB250/11R for F1664/32**
**70FB360/11R for F1667/32/43**

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# Service Manual

| (GB) TECHNICAL DATA | (NL) SPECIFICATIES | (F) SPECIFICATIONS | (D) TECHNISCHE DATEN | |
|---|---|---|---|---|
| Power supply voltages | Voedingsspanningen | Alimentation | Versorgungsspannungen | : 220 V, 110 V (127, 240 V Service solution) 50/60 Hz~ |
| Power consumption | Opgenomen vermogen | Puissance absorbée | Leistungsaufnahme | : ≤ 55 W (F1664) ≤ 65 W (F1667) |
| Dimensions | Afmetingen | Dimensions | Abmessungen | : 340x360x320 (hxwxd) |
| Wave ranges: | Golfbereiken: | Gammes d'ondes: | Wellenbereiche: | |
| FM | FM | FM | UKW | : 87.5 - 108 MHz |
| MW | MW | PO | MW | : 513 - 1611 kHz |
| LW | LW | GO | LW | : 146 - 263 kHz |
| Sensitivity: | Gevoeligheid: | Sensibilité: | Empfindlichkeit: | |
| △f 75 kHz FM | △f 75 kHz FM | △f 75 kHz FM | △f 75 kHz FM | : ( 3 µV mono, 26 dB SN) (60 µV stereo, 46 dB SN) |
| 600 kHz AM | 600 kHz AM | 600 kHz AM | 600 kHz AM | : (1400 µV/m for 26 dB SN) |
| IF: FM | IF: FM | IF: FM | IF: FM | : 10.7 MHz |
| IF: AM | IF: AM | IF: AM | IF: AM | : 450 kHz |
| Aerial input | Antenne ingang | Impédance d'antenne | Antennen-Impedanz | : 300 Ω |
| Input CD/TV | Ingang CD/TV | entrée CD/TV | Eingang CD/TV | : 700 mV (47 kΩ) |
| Output power (at 4 Ω load) | Uitgangsvermogen (4 Ω) | Puissance de sortie (4 Ω) | Ausgangsleistung (4 Ω) | : 2 x 7.5 W (1 kHz) D≤ 10% (F1664) : 2 x 9 W (1 kHz) D≤ 10% (F1667) |
| Output impedance | Uitgangsimpedantie | Impédance de sortie | Ausgangsimpedanz | : 4 Ω |
| Output impedance of headphones | Uitgangsimpedantie hoofdtelefoon | Impédance de sortie écouteurs | Kopfhorer-Ausgangs-impedanz | : 4-1000 Ω |
| **Cassette deck** | **Recorder** | **Magnétophone** | **Recorder** | |
| Speed | Snelheid | Vitesse | Geschwindigkeit | : 4.76 cm/sec ± 0.5% |
| Wow and flutter | Wow and flutter | Pleurage et scintillement | Gleichlaufschwankungen | : ≤0.2 % |
| **Record player** | **Platenspeler** | **Tourne-disque** | **Plattenspieler** | |
| Speed | Snelheid | Vitesse | Geschwindigkeit | : 33 1/3 - 45 r.p.m. |
| Wow and flutter | Wow and flutter | Pleurage et scintillement | Gleichlaufschwankungen | : ≤ 0.3 ‰ |

**Attention**

**This set is equipped with microprocessors having built-in test programmes.**
**For this test programme and the corresponding repair manual, see page CS 4 053 of this documentation.**

**Attentie**

**Dit apparaat is uitgerust met microprocessors met een ingebouwd testprogramma.**
**Zie voor dit testprogramma en de bijbehorende reparatiehandleidingen pagina CS 4 053 van deze dokumentatie**

**Attention**

**Cet appareil est équipé de microprocesseurs ayant un programme de test incorporé.**
**Se référer à la page CS 4 053 de cette Documentation pour ce qui concerne ce programme de test et la méthode de réparation qui s'y rapporte.**

**Achtung!**

**Dieses Gerät ist mit Mikroprozessoren mit einem eingebauten Prüfprogramm ausgestattet.**
**Für dieses Prüfprogramm und die zugehörige Reparaturanleitung siehe Seite CS 4 053 dieser Dokumentation.**


Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

PHILIPS

Pour votre sécurité: ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne.

Subject to modification

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**TOP VIEW**

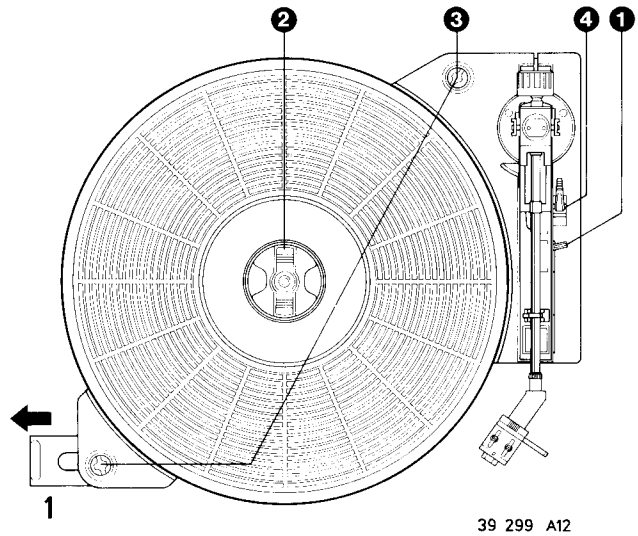



Fig. 1

**FRONT VIEW**

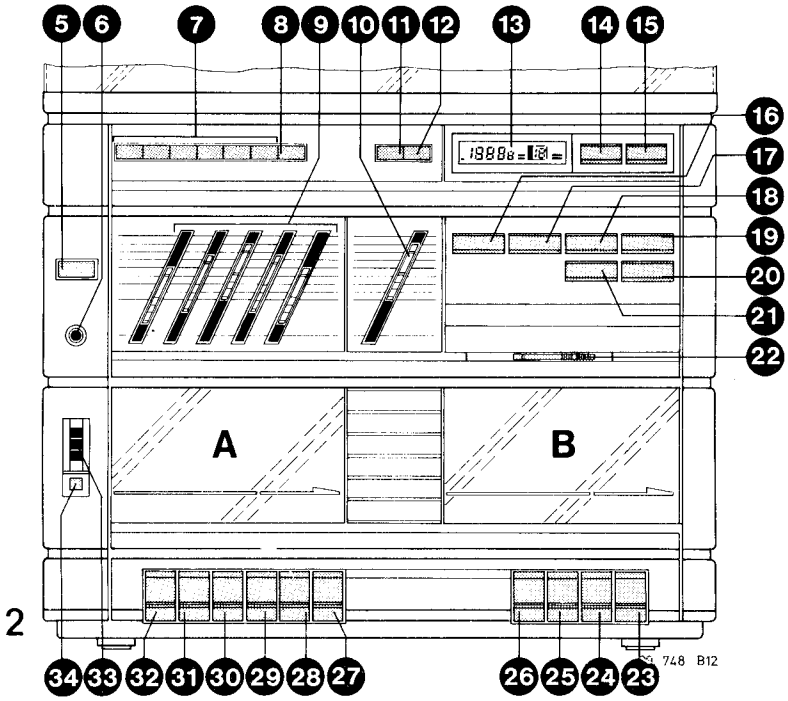



Fig. 2

**REAR VIEW**

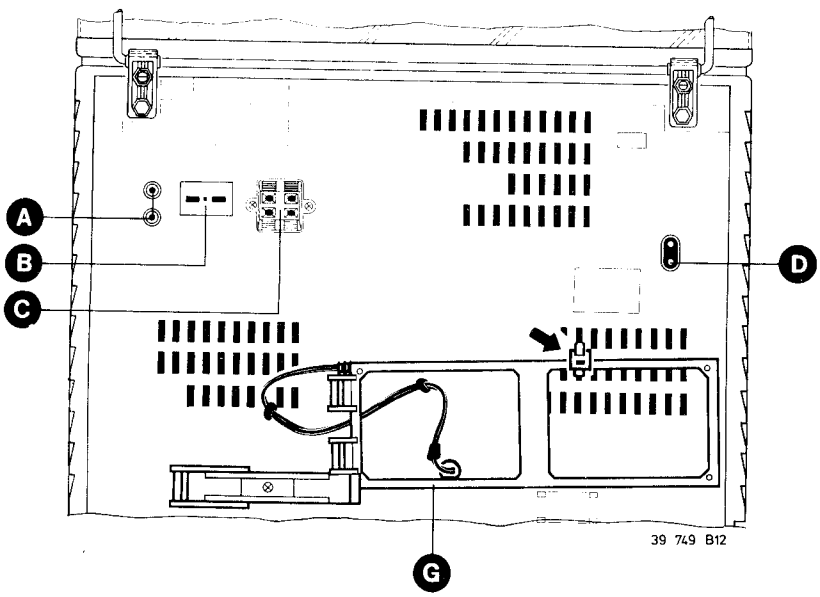



Fig. 3

**CONTROLS**

1 Speed selector
2 Adapter for 45 rpm. records
3 Transit screws
4 Cue lever
5 'POWER' On/Off switch
6 Headphone socket BU–5
7 Pre–sets
8 Programming key 'MEMORY'
9 'GRAPHIC EQUALIZER'
10 'BALANCE'
11 AM/FM selection
12 LW/MW selection
13 Display
14 Key 'DOWN'
15 Key 'UP'
16 'MONO/RIF' mono stereo selection
17 Tape type selector (recorder A)
18 Tape type selector (recorder B)
19 'DUBBING'
20 'TAPE','TUNER','CD.TV'
21 'PHONO','TUNER','CD.TV'
22 'VOLUME'
23 'PLAY'
24 'STOP/EJECT'
25 'WIND'
26 'REWIND'
27 'PAUSE'
28 'PLAY'
29 'STOP/EJECT'
30 'WIND'
31 'REWIND'
32 'RECORD'
33 'COUNTER'
34 'RESET'

**SOCKETS**

A 'AUX' terminal sockets
B FM aerial, 300 Ohms
C Loudspeaker terminals
D Mains connection socket

**Servicing hints**

1 Demounting
See Fig. 4

2 Replacing PU cartridge
See Fig. 5

3 Remove Record player
See Fig. 6

4 Chip handling
See Fig. 7

5 Service position "RF panel"
See Fig. 8

6 Microprocessor check
See next page

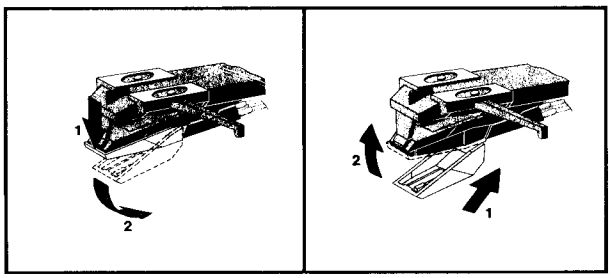



Fig. 5

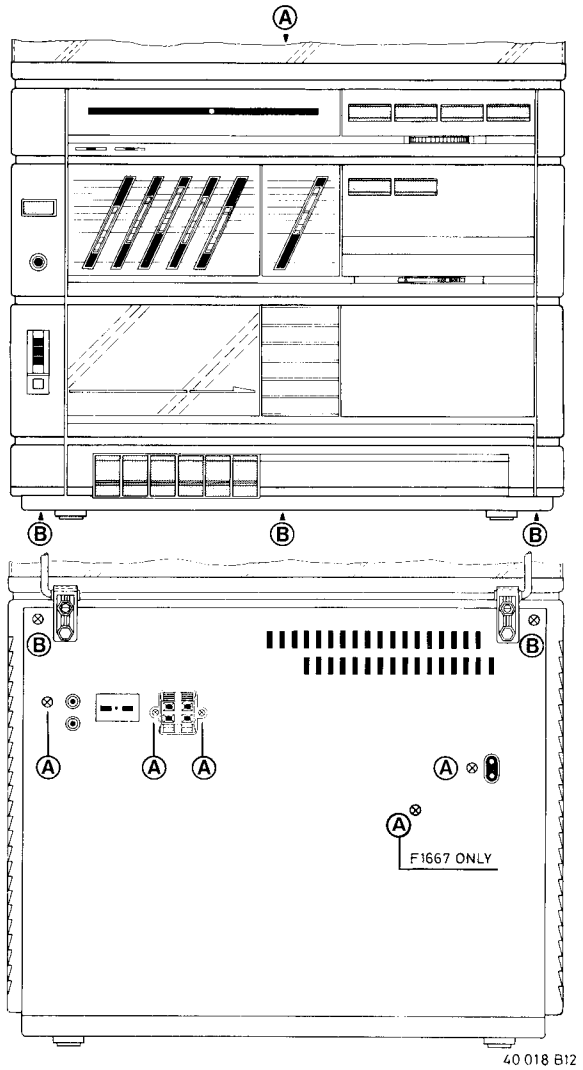



Fig. 4

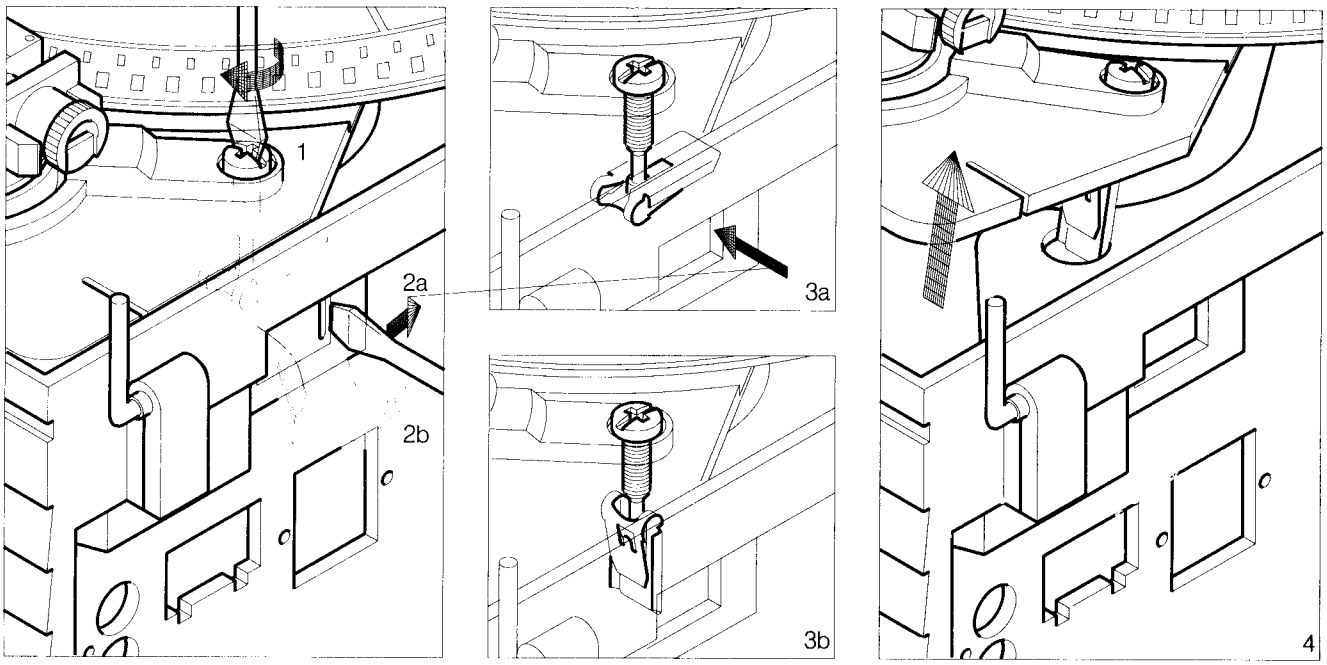


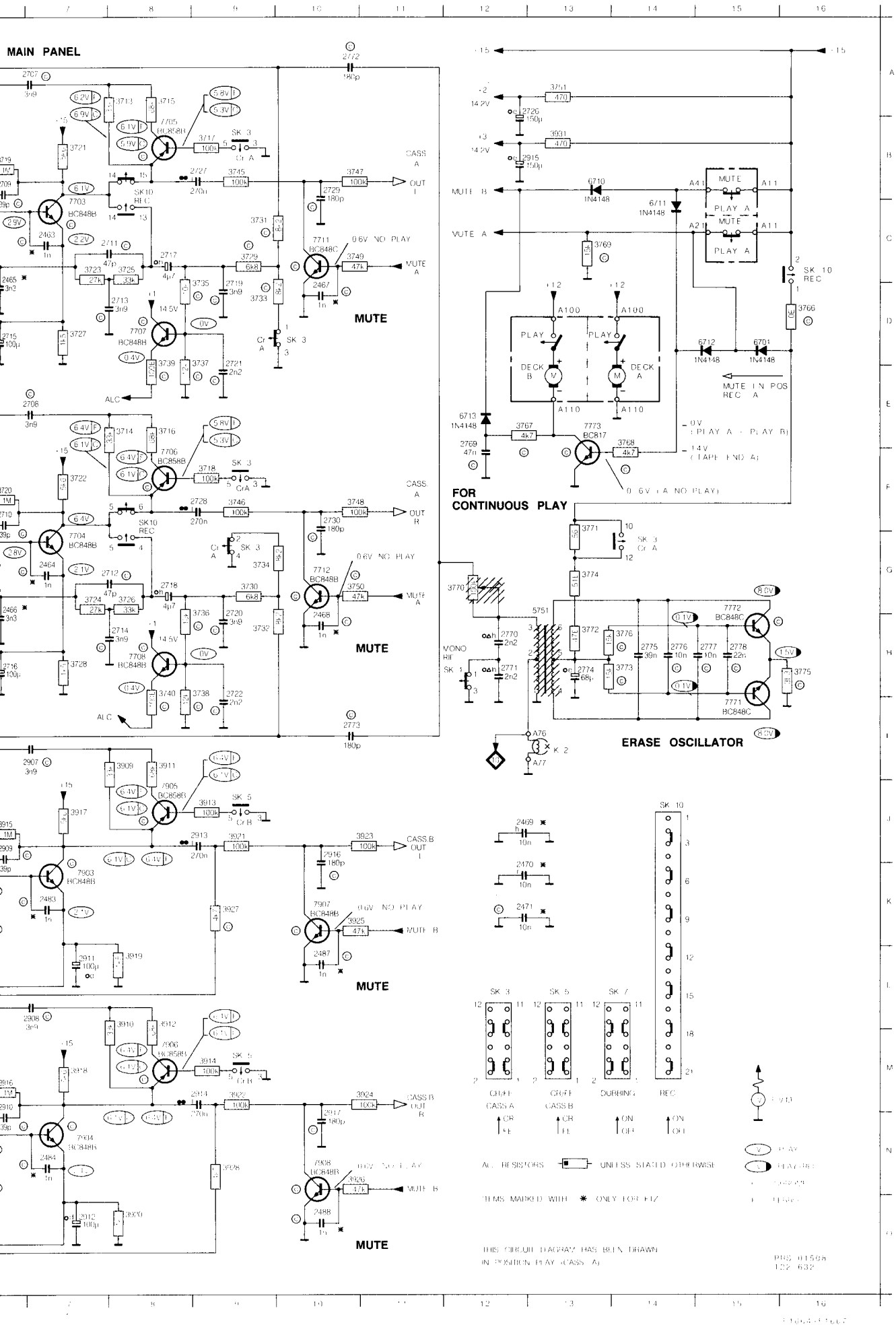

Fig. 6

38 217 A12

MDA.00253

CS 4 051

RECORDER PART
MAIN PANEL
L
PRE-AMPLIFIER
DECK A
R
PRE-AMPLIFIER
DECK A
L
PRE-AMPLIFIER
DECK B
R
PRE-AMPLIFIER
DECK B
MUTE
MUTE
MUTE
MUTE
FOR
CONTINUOUS PL
DECK A
L
DECK A
R
DECK B
L
DECK B
R
IN L
IN R
DUBBING
FROM
AF CIRCUIT
L
FROM
AF CIRCUIT
R
ALC
CASS
A
OUT
L
CASS
A
OUT
R
CASS B
OUT
L
CASS B
OUT
R
MUTE
A
MUTE
B
0.6V NO PLAY
REC
REC
REC
REC
MONO
RIF
ALL RESISTORS
PLUS MARKED




| | | | | | |
|---|---|---|---|---|---|
| 2461 | C 5 | 3907 | J 5 | | |
| 2462 | G 5 | 3908 | M 5 | | |
| 2463 | C 7 | 3909 | I 8 | | |
| 2464 | G 7 | 3910 | I 8 | | |
| 2465 | C 6 | 3911 | I 8 | | |
| 2466 | G 6 | 3912 | I 8 | | |
| 2467 | D10 | 3913 | J 9 | | |
| 2468 | H10 | 3914 | M 9 | | |
| 2481 | K 5 | 3915 | J 6 | | |
| 2482 | N 5 | 3916 | M 6 | | |
| 2483 | K 7 | 3917 | J 7 | | |
| 2484 | N 7 | 3918 | M 7 | | |
| 2487 | I 10 | 3919 | I 8 | | |
| 2488 | O10 | 3920 | O 8 | | |
| 2701 | C 4 | 3921 | J 9 | | |
| 2702 | G 4 | 3922 | M 9 | | |
| 2703 | C 5 | 3923 | J11 | | |
| 2704 | G 5 | 3924 | M11 | | |
| 2705 | C 5 | 3925 | K10 | | |
| 2706 | G 5 | 3926 | N10 | | |
| 2707 | A 7 | 3927 | K 9 | | |
| 2708 | F 7 | 3928 | N 9 | | |
| 2709 | B 6 | 3929 | O 2 | | |
| 2710 | F 6 | 3930 | L 2 | | |
| 2711 | C 8 | 3931 | B13 | | |
| 2712 | G 8 | 5751 | G13 | | |
| 2713 | D 8 | 6701 | D15 | | |
| 2714 | H 8 | 6710 | B13 | | |
| 2715 | D 6 | 6711 | C14 | | |
| 2716 | H 6 | 6712 | D15 | | |
| 2717 | C 8 | 6713 | E12 | | |
| 2718 | G 8 | 7701 | C 5 | | |
| 2719 | D 9 | 7702 | G 5 | | |
| 2720 | G 9 | 7703 | C 7 | | |
| 2721 | D 9 | 7704 | G 7 | | |
| 2722 | H 9 | 7705 | B 8 | | |
| 2723 | D 4 | 7706 | F 8 | | |
| 2724 | H 4 | 7707 | D 8 | | |
| 2725 | F 5 | 7708 | H 8 | | |
| 2726 | A13 | 7709 | D 4 | | |
| 2727 | B 9 | 7710 | E 4 | | |
| 2728 | F 9 | 7711 | C10 | | |
| 2729 | B10 | 7712 | G10 | | |
| 2730 | F10 | 7771 | I 15 | | |
| 2769 | E12 | 7772 | G15 | | |
| 2770 | H12 | 7773 | F13 | | |
| 2771 | H12 | 7901 | K 5 | | |
| 2772 | A10 | 7902 | N 5 | | |
| 2773 | I 10 | 7903 | K 7 | | |
| 2774 | H13 | 7904 | N 7 | | |
| 2775 | H14 | 7905 | J 8 | | |
| 2776 | H14 | 7906 | M 8 | | |
| 2777 | H15 | 7907 | K10 | | |
| 2778 | H15 | 7908 | N10 | | |
| 2901 | K 4 | | | | |
| 2902 | N 4 | | | | |
| 2903 | K 5 | | | | |
| 2904 | N 5 | | | | |
| 2905 | K 5 | | | | |
| 2906 | N 5 | | | | |
| 2907 | I 7 | | | | |
| 2908 | L 7 | | | | |
| 2909 | J 6 | | | | |
| 2910 | M 6 | | | | |
| 2911 | L 7 | | | | |
| 2912 | O 7 | | | | |
| 2913 | J 9 | | | | |
| 2914 | M 9 | | | | |
| 2915 | B13 | | | | |
| 2916 | J10 | | | | |
| 2917 | N10 | | | | |
| 3701 | C 2 | | | | |
| 3702 | H 2 | | | | |
| 3703 | C 3 | | | | |
| 3704 | G 3 | | | | |
| 3705 | G 4 | | | | |
| 3706 | G 4 | | | | |
| 3707 | C 4 | | | | |
| 3708 | G 4 | | | | |
| 3709 | B 5 | | | | |
| 3710 | F 5 | | | | |
| 3711 | C 6 | | | | |
| 3712 | G 6 | | | | |
| 3713 | A 8 | | | | |
| 3714 | E 8 | | | | |
| 3715 | A 8 | | | | |
| 3716 | E 8 | | | | |
| 3717 | B 9 | | | | |
| 3718 | F 9 | | | | |
| 3719 | B 6 | | | | |
| 3720 | F 6 | | | | |
| 3721 | B 7 | | | | |
| 3722 | F 7 | | | | |
| 3723 | C 7 | | | | |
| 3724 | G 7 | | | | |
| 3725 | C 8 | | | | |
| 3726 | G 8 | | | | |
| 3727 | D 7 | | | | |
| 3728 | H 7 | | | | |
| 3729 | C 9 | | | | |
| 3730 | G 9 | | | | |
| 3731 | C 9 | | | | |
| 3732 | H 9 | | | | |
| 3733 | D 9 | | | | |
| 3734 | G 9 | | | | |
| 3735 | C 9 | | | | |
| 3736 | G 9 | | | | |
| 3737 | D 9 | | | | |
| 3738 | H 9 | | | | |
| 3739 | D 8 | | | | |
| 3740 | H 8 | | | | |
| 3741 | I 3 | | | | |
| 3742 | E 3 | | | | |
| 3743 | D 2 | | | | |
| 3744 | F 2 | | | | |
| 3745 | B 9 | | | | |
| 3746 | F 9 | | | | |
| 3747 | B10 | | | | |
| 3748 | F10 | | | | |
| 3749 | G10 | | | | |
| 3750 | G10 | | | | |
| 3751 | A13 | | | | |
| 3753 | C 2 | | | | |
| 3754 | B 3 | | | | |
| 3755 | E 3 | | | | |
| 3756 | O 3 | | | | |
| 3766 | B16 | | | | |
| 3767 | F12 | | | | |
| 3768 | H14 | | | | |
| 3769 | G13 | | | | |
| 3770 | G12 | | | | |
| 3771 | I 13 | | | | |
| 3772 | H13 | | | | |
| 3773 | H14 | | | | |
| 3774 | G13 | | | | |
| 3775 | H16 | | | | |
| 3776 | H14 | | | | |
| 3901 | K 4 | | | | |
| 3902 | O 4 | | | | |
| 3903 | K 3 | | | | |
| 3904 | N 3 | | | | |
| 3905 | K 6 | | | | |
| 3906 | O 6 | | | | |

## HANDLING CHIP COMPONENTS

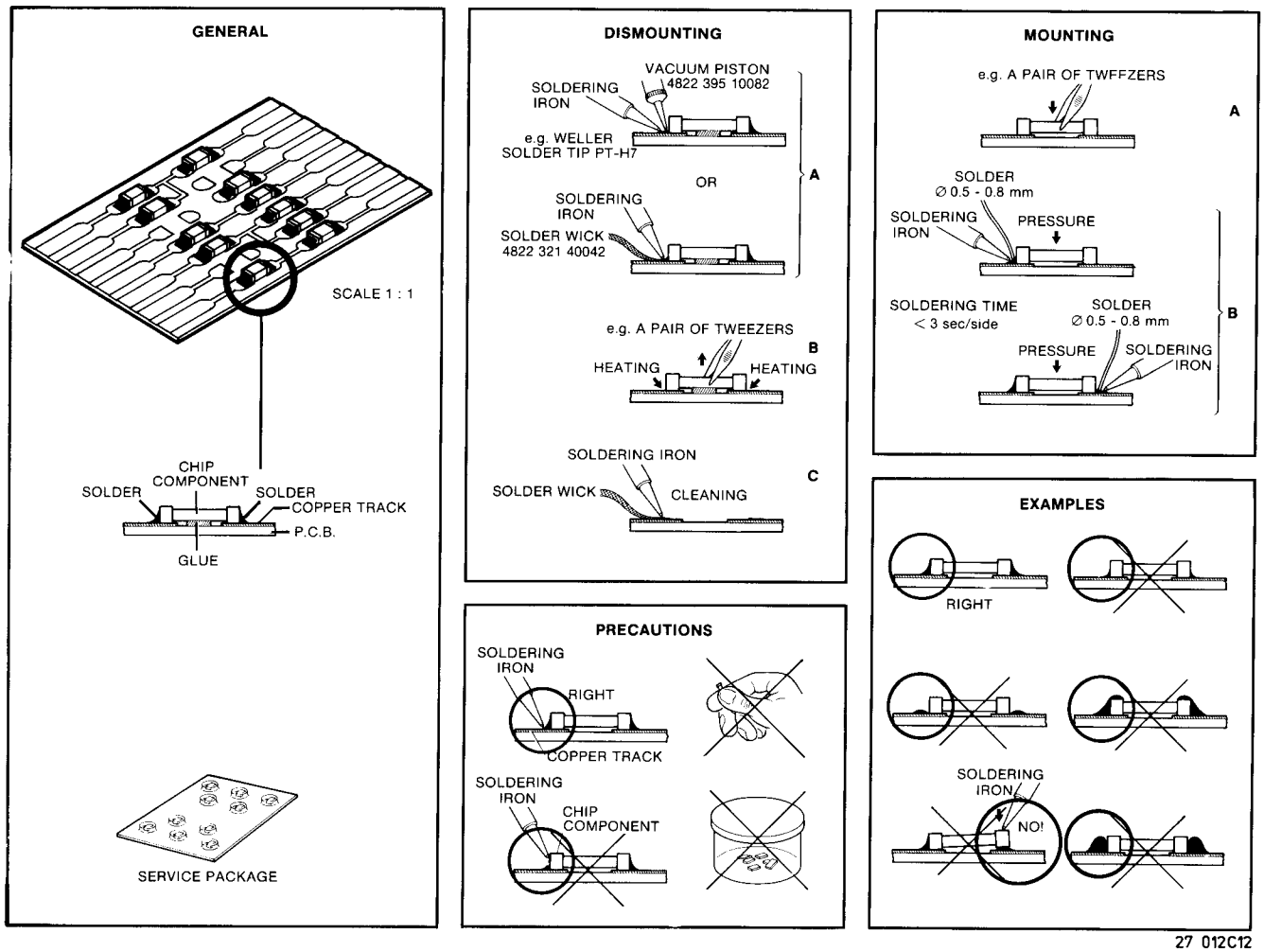



Fig. 7

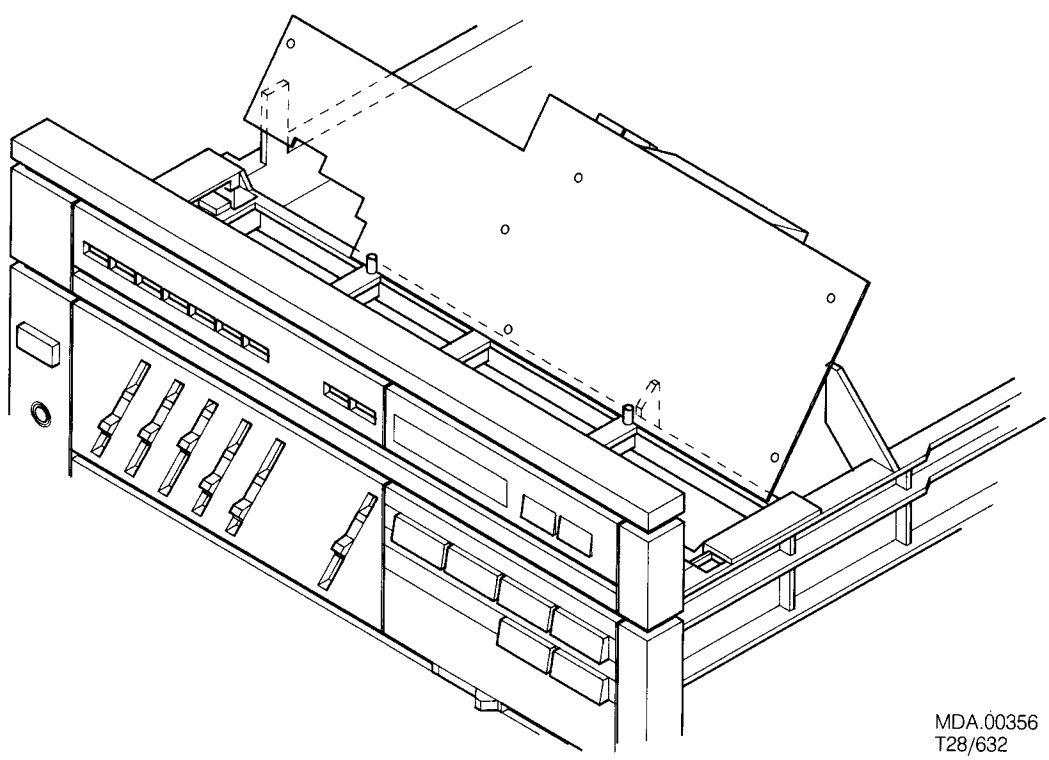
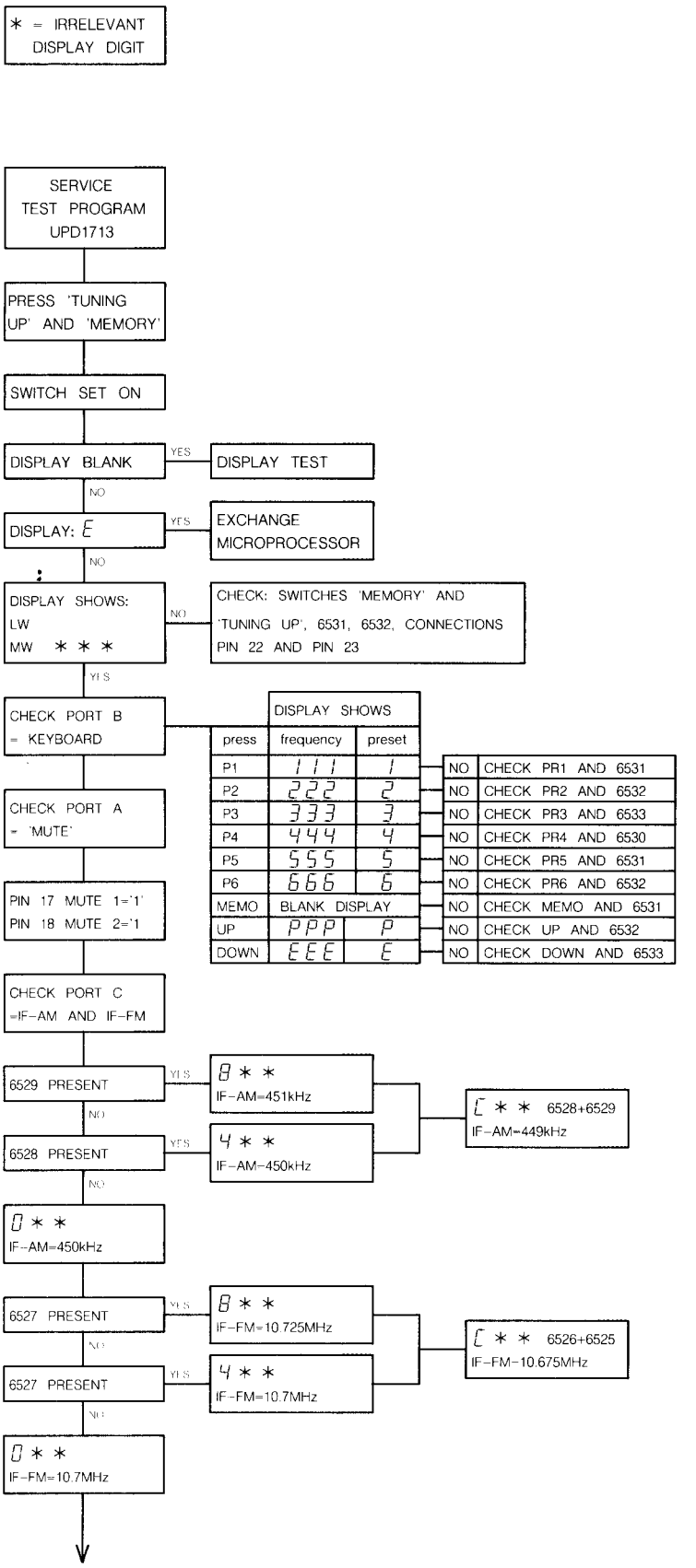
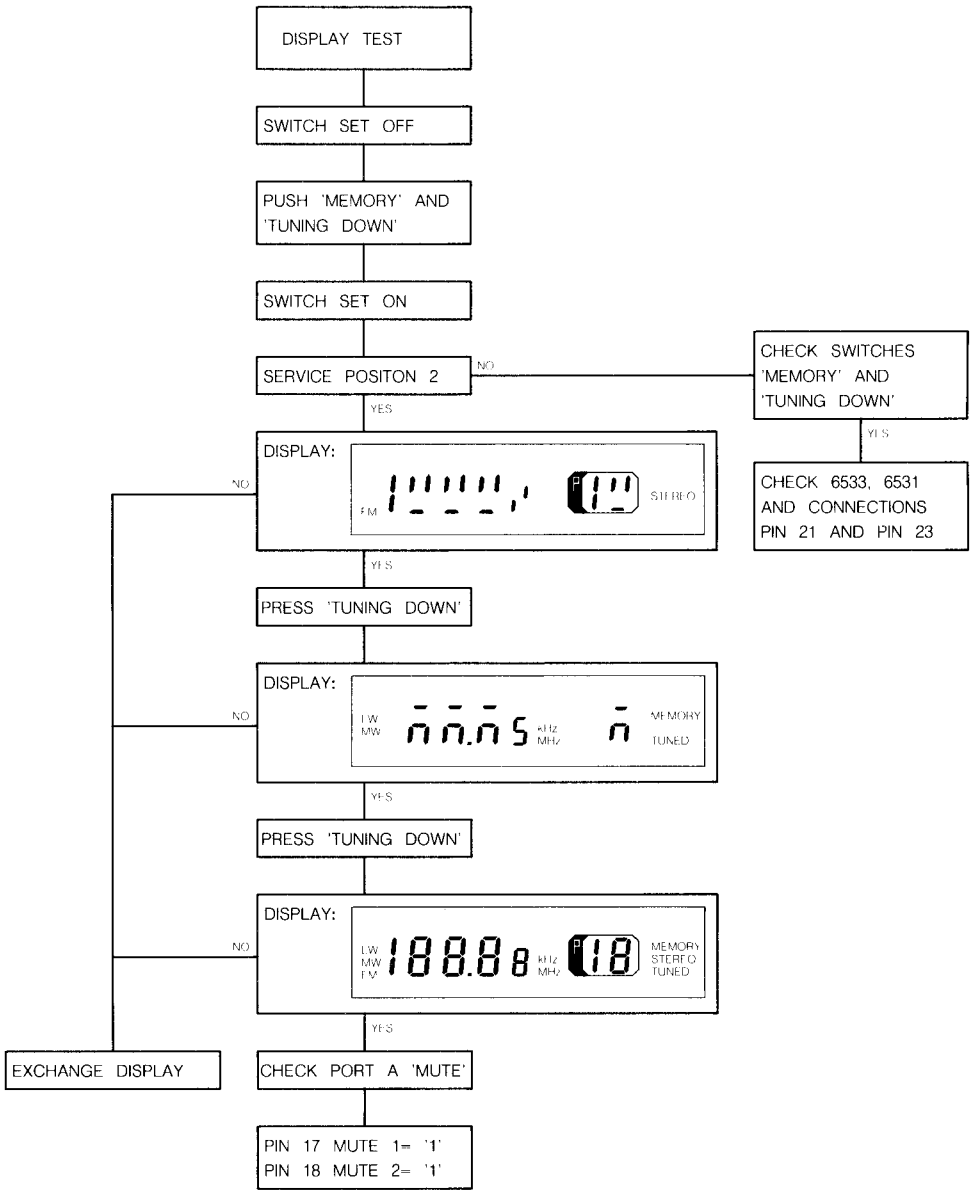



Fig. 8

## MICRO PROCESSOR CHECK


* = IRRELEVANT DISPLAY DIGIT
SERVICE TEST PROGRAM UPD1713
PRESS 'TUNING UP' AND 'MEMORY'
SWITCH SET ON
DISPLAY BLANK
YES
DISPLAY TEST
NO
DISPLAY: E
YES
EXCHANGE MICROPROCESSOR
NO
DISPLAY SHOWS: LW MW * * *
NO
CHECK: SWITCHES 'MEMORY' AND 'TUNING UP', 6531, 6532, CONNECTIONS PIN 22 AND PIN 23
YES
CHECK PORT B = KEYBOARD
DISPLAY SHOWS
press | frequency | preset
P1 | 111 | 1 | NO | CHECK PR1 AND 6531
P2 | 222 | 2 | NO | CHECK PR2 AND 6532
P3 | 333 | 3 | NO | CHECK PR3 AND 6533
P4 | 444 | 4 | NO | CHECK PR4 AND 6530
P5 | 555 | 5 | NO | CHECK PR5 AND 6531
P6 | 666 | 6 | NO | CHECK PR6 AND 6532
MEMO | BLANK DISPLAY | NO | CHECK MEMO AND 6531
UP | PPP | P | NO | CHECK UP AND 6532
DOWN | EEE | E | NO | CHECK DOWN AND 6533
CHECK PORT A = 'MUTE'
PIN 17 MUTE 1='1' PIN 18 MUTE 2='1
CHECK PORT C =IF-AM AND IF-FM
6529 PRESENT
YES
8 * * IF-AM=451kHz
NO
6528 PRESENT
YES
4 * * IF-AM=450kHz
C * * 6528+6529 IF-AM=449kHz
NO
0 * * IF-AM=450kHz
6527 PRESENT
YES
8 * * IF-FM=10.725MHz
NO
6527 PRESENT
YES
4 * * IF-FM=10.7MHz
C * * 6526+6525 IF-FM=10.675MHz
NO
0 * * IF-FM=10.7MHz
SK-10 OUT SK-11 OUT
YES
* * 0 FM
SK-10 OUT SK-11 IN
YES
* * 4 FM
SK-10 IN SK-11 OUT
YES
* * 8 MW
SK-10 IN SK-11 IN
YES
* * C LW
C7511 TO MASS SK-10+SK-11 OUT
YES
* * 1 'TUNED' OK
NO
CHECK 7528 CHECK 6524
D223 TO MASS SK-10+SK-11 OUT
YES
* * 2 'STEREO OK'
NO
CHECK 7529 CHECK 6525
SWITCH SET OFF
WAIT 10 SECONDS
SWITCH SET ON
CHECK RAM
INPUT PORT K
LSB MSB
1 2 3 4 DISPL SHOW
0 0 0 0 * >
1 0 0 0 * >
0 1 0 0 * >
1 1 0 0 * >
0 0 1 0 * >
1 0 1 0 * >
0 1 1 0 * >
1 1 1 0 * >
0 0 0 1 * >
1 0 0 1 * >
0 1 0 1 * >
1 1 0 1 * >
0 0 1 1 * >
1 0 1 1 BLA
0 1 1 1 * >
1 1 1 1 * >
WAVE RANGE
PRESS PRESET | FM MHz | MW kHz | LW kHz
1 | 87.50 | 522 | 150
2 | 93.70 | 558 | 155
3 | 97.00 | 567 | 254
4 | 98.00 | 1278 | 263
5 | 99.00 | 1494 | 150
6 | 104.90 | 522 | 150
7 | 108.00 | – | –
8÷12 | 87.50 | – | –

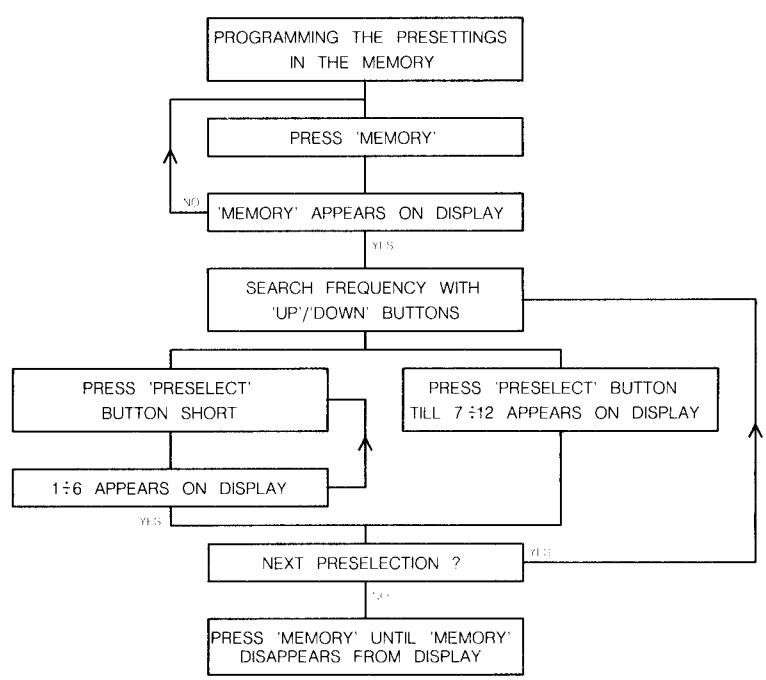



| INPUT PORT K LSB | | | MSB | DISPLAY SHOWS |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | * * 0 |
| 0 | 0 | 0 | 0 | * * 1 |
| 1 | 0 | 0 | 0 | * * 2 |
| 0 | 1 | 0 | 0 | * * 3 |
| 1 | 1 | 0 | 0 | * * 4 |
| 0 | 0 | 1 | 0 | * * 5 |
| 1 | 0 | 1 | 0 | * * 6 |
| 0 | 1 | 1 | 0 | * * 7 |
| 1 | 1 | 1 | 0 | * * 8 |
| 0 | 0 | 0 | 1 | * * 9 |
| 1 | 0 | 0 | 1 | * * A |
| 0 | 1 | 0 | 1 | * * B |
| 1 | 1 | 0 | 1 | * * C |
| 0 | 0 | 1 | 1 | BLANK |
| 1 | 0 | 1 | 1 | * * E |
| 0 | 1 | 1 | 1 | * * P |

OK

OK'

| VE RANGE | | |
|---|---|---|
| z | MW kHz | LW kHz |
| 50 | 522 | 150 |
| 70 | 558 | 155 |
| 00 | 567 | 254 |
| 00 | 1278 | 263 |
| 00 | 1494 | 150 |
| 90 | 522 | 150 |
| 00 | – | – |
| 50 | – | – |



(GB)

**WARNING**

ESD

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(NL)

**WAARSCHUWING**

ESD

Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor, dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F)

**ATTENTION**

ESD

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D)

**WARNUNG**

ESD

Alle IC's und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

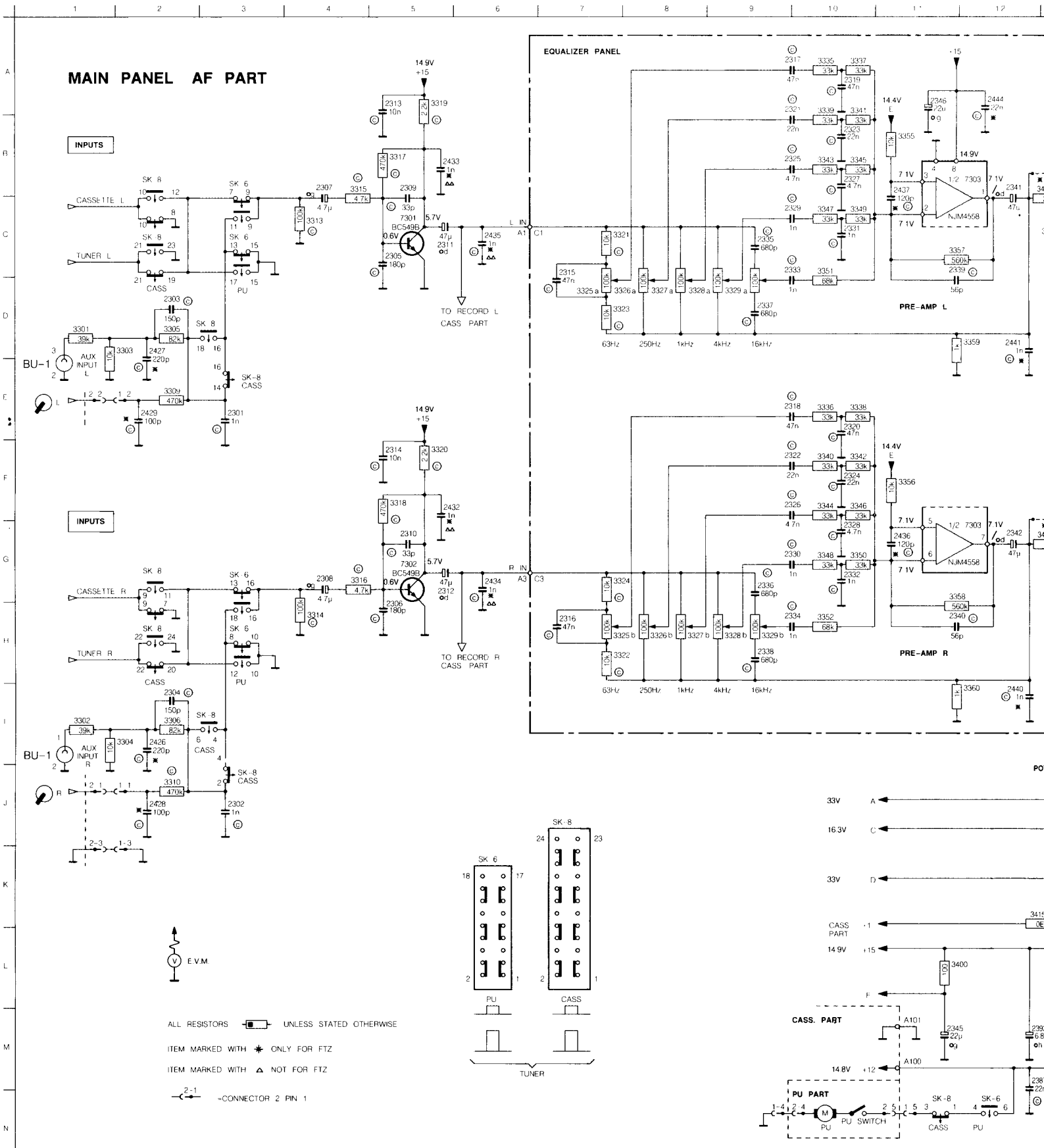
(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

(F)

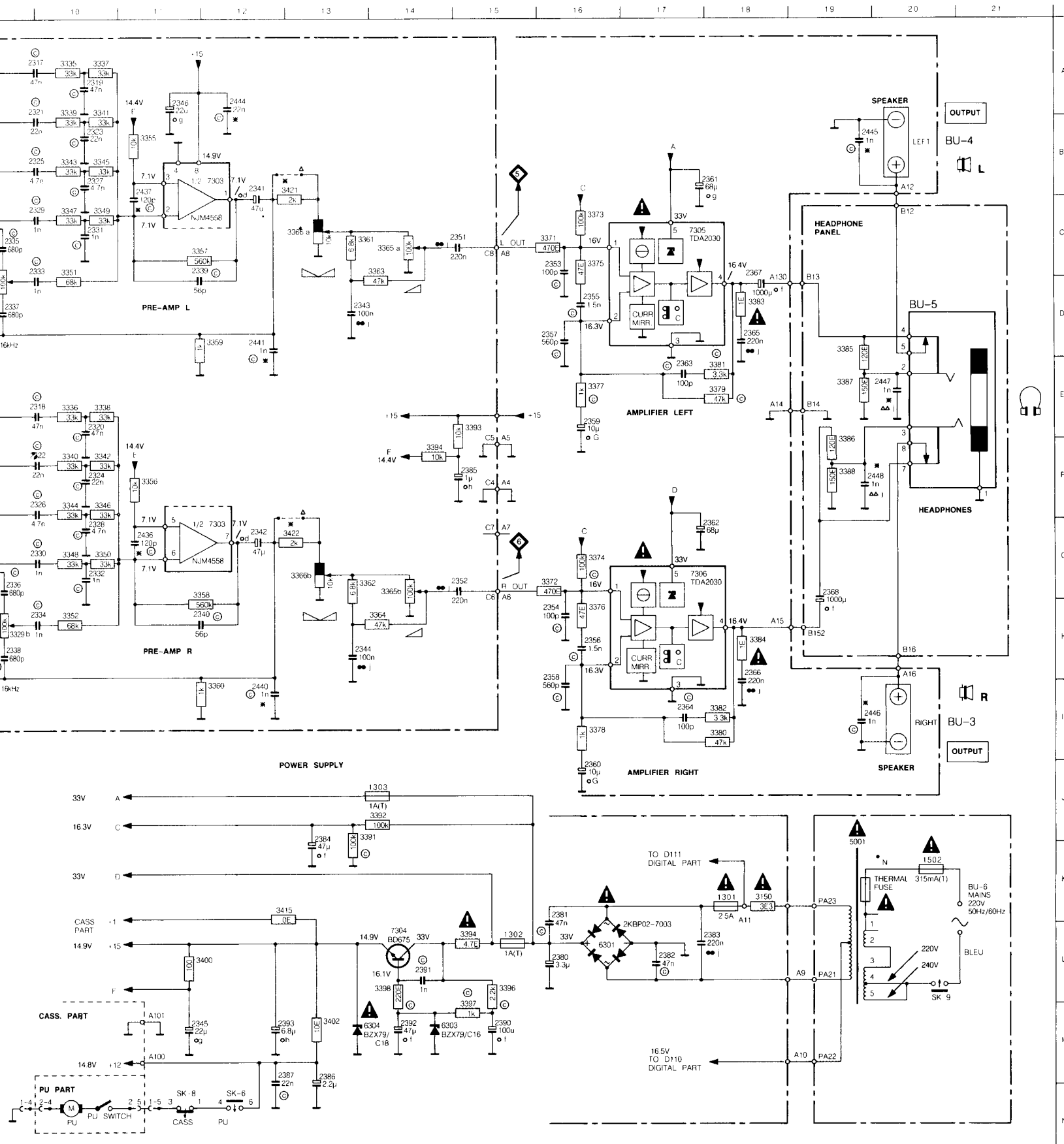
Les normes de sécurité exigent que l'appareil soit remis à l'état d'orgine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1301 | K18 | 2304 | I 2 | 2311 | C 5 | 2318 | E10 | 2325 | B10 | 2332 | G10 | 2339 | C11 | 2346 | A11 | 2357 | D16 | 2364 | +17 | 2382 | L17 | 2391 | L14 | 2432 | F 6 | 2441 | D12 | 3301 | D 1 | 3310 | J 2 | 3319 | A 5 | 3325 |
| 1302 | L15 | 2305 | C 5 | 2312 | G 5 | 2319 | A10 | 2326 | F10 | 2333 | C10 | 2340 | H11 | 2351 | C15 | 2358 | H16 | 2365 | D18 | 2383 | I 18 | 2392 | M14 | 2433 | B 6 | 2444 | A12 | 3302 | I 1 | 3311 | C 4 | 3320 | F 5 | 3326 |
| 1303 | J14 | 2306 | H 5 | 2313 | A 5 | 2320 | F10 | 2327 | B10 | 2334 | H10 | 2341 | B12 | 2352 | G15 | 2359 | E16 | 2366 | H18 | 2384 | J13 | 2393 | M13 | 2434 | G 6 | 2445 | B20 | 3303 | D 2 | 3314 | H 4 | 3321 | C 8 | 3326 |
| 1502 | K20 | 2307 | B 4 | 2314 | F 5 | 2321 | A10 | 2328 | G10 | 2335 | C 9 | 2342 | G12 | 2353 | C16 | 2360 | J16 | 2367 | C18 | 2385 | F15 | 2426 | I 2 | 2435 | C 6 | 2446 | +20 | 3304 | I 2 | 3315 | B 4 | 3322 | H 8 | 3327 |
| 2301 | F 3 | 2308 | G 4 | 2315 | C 7 | 2322 | F10 | 2329 | C10 | 2336 | G 9 | 2343 | D13 | 2354 | H16 | 2361 | B18 | 2368 | G19 | 2386 | M13 | 2427 | D 2 | 2436 | G11 | 2447 | E20 | 3305 | D 2 | 3316 | G 4 | 3323 | D 8 | 3327 |
| 2302 | J 3 | 2309 | B 5 | 2316 | H 7 | 2323 | B10 | 2330 | G10 | 2337 | D 9 | 2344 | H13 | 2355 | D16 | 2362 | G18 | 2380 | L16 | 2387 | M13 | 2428 | J 2 | 2437 | B11 | 2448 | F20 | 3306 | I 2 | 3317 | E 5 | 3324 | G 8 | 3328 |
| 2303 | D 2 | 2310 | G 5 | 2317 | A10 | 2324 | F10 | 2331 | C10 | 2338 | H 9 | 2345 | M11 | 2356 | H16 | 2363 | E17 | 2381 | K16 | 2390 | M15 | 2429 | F 2 | 2440 | +12 | 3150 | K18 | 3309 | I 2 | 3318 | F 5 | 3325 | D 7 | 3328 |



## F1667 ONLY

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F 6 | 2441 | D12 | 3301 | D 1 | 3310 | J 2 | 3319 | A 5 | 3325 | H 7 | 3329 | D 9 | 3340 | F10 | 3347 | C10 | 3356 | F11 | 3363 | C14 | 3372 | G16 | 3379 | E18 | 3386 | F19 | 3394 | L15 | 3421 | B13 | 7302 | G 5 |
| B 6 | 2444 | A12 | 3302 | J 1 | 3313 | C 4 | 3320 | F 5 | 3326 | D 7 | 3329 | H 9 | 3341 | A10 | 3348 | G10 | 3357 | C11 | 3364 | H14 | 3373 | C16 | 3380 | I 18 | 3387 | E19 | 3396 | L15 | 3422 | G13 | 7304 | L14 |
| G 6 | 2445 | B20 | 3303 | D 2 | 3314 | H 4 | 3321 | C 8 | 3326 | H 8 | 3335 | A10 | 3342 | F10 | 3349 | C10 | 3358 | G11 | 3365 | C14 | 3374 | G16 | 3381 | E18 | 3388 | F19 | 3397 | M15 | 5001 | K19 | 7305 | C17 |
| C 6 | 2446 | I 20 | 3304 | I 2 | 3315 | B 4 | 3322 | H 8 | 3327 | D 8 | 3336 | E10 | 3343 | B10 | 3350 | G10 | 3359 | D12 | 3365 | G14 | 3375 | C16 | 3382 | I 18 | 3391 | J 13 | 3398 | L14 | 6301 | L16 | 7306 | G17 |
| G11 | 2447 | E20 | 3305 | G 2 | 3316 | G 4 | 3323 | D 8 | 3327 | H 8 | 3337 | A10 | 3344 | F10 | 3351 | C10 | 3360 | I 12 | 3366 | C13 | 3376 | H16 | 3383 | D18 | 3392 | J 14 | 3400 | L12 | 6303 | M14 | | |
| B11 | 2448 | F20 | 3306 | I 2 | 3317 | B 5 | 3324 | G 8 | 3328 | D 8 | 3338 | E10 | 3345 | B10 | 3352 | H10 | 3361 | C13 | 3366 | G13 | 3377 | E16 | 3384 | H18 | 3393 | E15 | 3402 | M13 | 6304 | M14 | | |
| I 12 | 3150 | K18 | 3309 | E 2 | 3318 | F 5 | 3325 | D 7 | 3328 | H 9 | 3339 | A10 | 3346 | F10 | 3355 | B11 | 3362 | G13 | 3371 | C16 | 3378 | I 16 | 3385 | D19 | 3394 | F14 | 3415 | K12 | 7301 | C 5 | | |



## F1664 ONLY

**7301/7302**

e = ⊥
b = 0.6 V
c = 5.7 V

**7101**

g = 0 V
s = ⊥
d = 5.7 V

**7109**

| | |
|---|---|
| e = 0.3 V | 0 V |
| b = 1.0 V | 0.3 V |
| c = 6.7 V | 7.4 V |

**7901/7902**

e = 0 V
b = 0.6 V
c = 2.8 V

**7303**

1 = 7.1 V
2 = 7.1 V
3 = 7.1 V
4 = ⊥
5 = 7.1 V
6 = 7.1 V
7 = 7.1 V
8 = 14.4 V

**7103**

e = 1.1 V
b = 1.9 V
c = 6.0 V

**7701/7702**

e = 0 V
b = 0.6 V
c = 2.9 V

**7903/7904**

e = 2.1 V
b = 2.8 V
c = 6.9 V

**7105**

e = 1.4 V
b = 0.6 V
c = 4.0 V

**7703/7704**

e = 2.2 V
b = 2.9 V
c = 6.1 V

**7905/7906**

| | | | | |
|---|---|---|---|---|
| e = | 6.4 V | F | 6.1 V | C |
| b = | 5.9 V | F | 5.4 V | C |
| c = | 6.3 V | F | 6.1 V | C |

**7304**

e = 14.4 V
b = 15.6 V
c = 30.6 V

**7305/7306**

1 = 15 V
2 = 15.4 V
3 = ⊥
4 = 15.4 V
5 = 30.6 V

**7705/7706**

| | | | | |
|---|---|---|---|---|
| e = | 6.2 V | F | 5.9 V | C |
| b = | 5.8 V | F | 5.3 V | C |
| c = | 6.1 V | F | 5.9 V | C |

**7107**

| | |
|---|---|
| 1 = 1.4 V | 0 V |
| 2 = 0.6 V | 1.4 V |
| 3 = 0.6 V | 1.4 V |
| 4 = 5.6 V | 5.9 V |
| 5 = 3.9 V | 5.9 V |
| 6 = 0.7 V | 5.9 V |
| 7 = 5.6 V | 5.9 V |
| 8 = 5.6 V | 5.9 V |
| 9 = 5.5 V | 5.9 V |
| 10 = 5.5 V | 5.9 V |
| 11 = 1.3 V | 1.3 V |
| 12 = 0 V | |
| 13 = 0.7 V | |
| 14 = 5.2 V | 5.6 V |
| 15 = 0 V | |
| 16 = ⊥ | |

**7108**

| | |
|---|---|
| 1 = 3.4 V | |
| 2 = 6.0 V | |
| 3 = 7.4 V | |
| 4 = 6.6 V | 5.6 V |
| 5 = ⊥ | |
| 6 = 12.9 V | |
| 7 = 6.7 V | 7.5 V |
| 8 = 4.1 V | |
| 9 = 4.0 V | |

**7707/7708**

e = 0.4 V
b = 0 V
c = 14.5 V

**7709/7710**

e = 0 V
b = 0.4 V
c = 0 V

**7711/7712**

| | |
|---|---|
| e = | 0 V |
| b = | 0.2 V 0.6 V |
| c = | 0 V |

**7771/7772**

e = 0.6 V
b = 1.2 V
c = 8.3 V

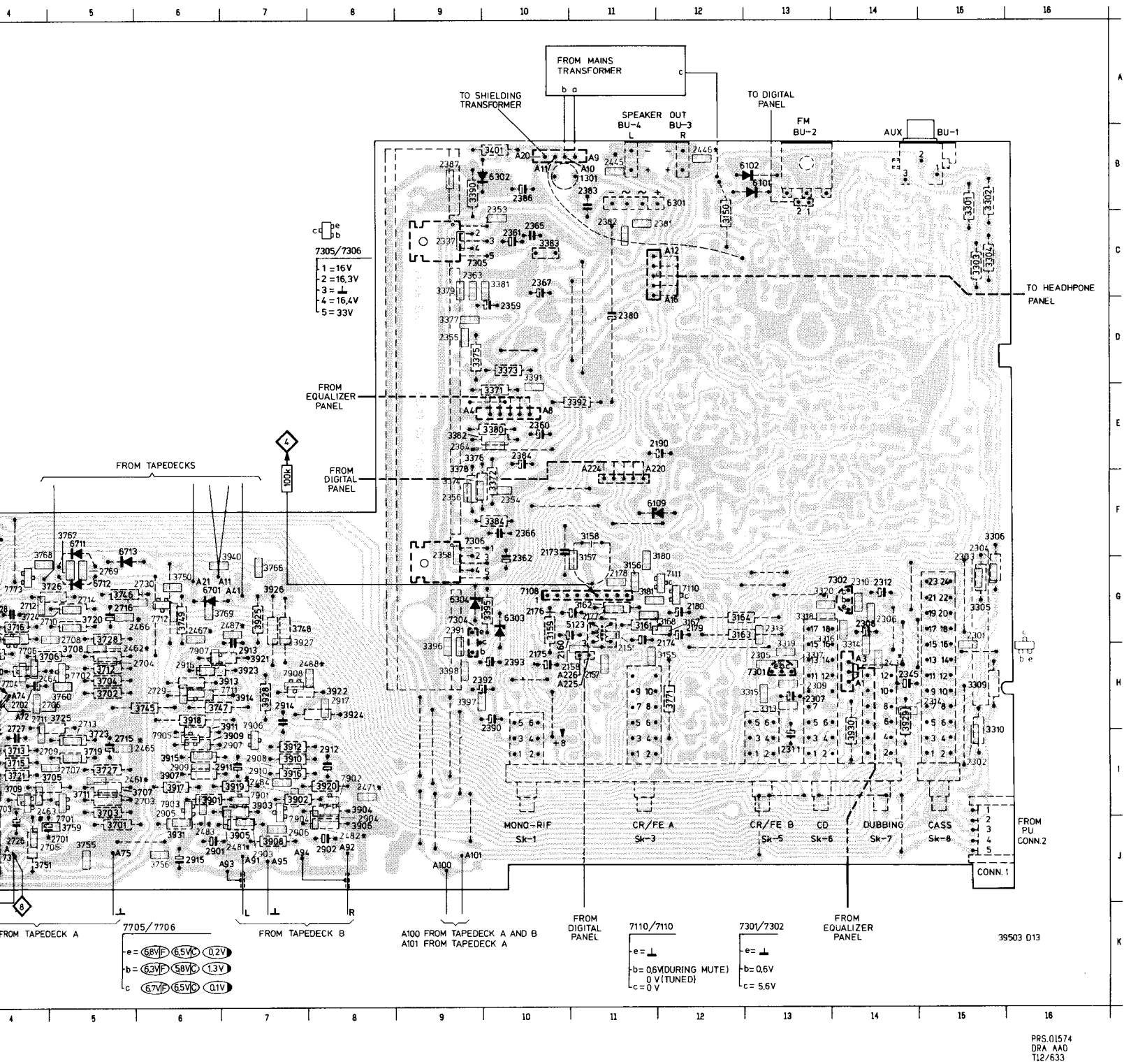
**7773**

e = ⊥
b = 0.7 V
c = 3.2 V

| | | | |

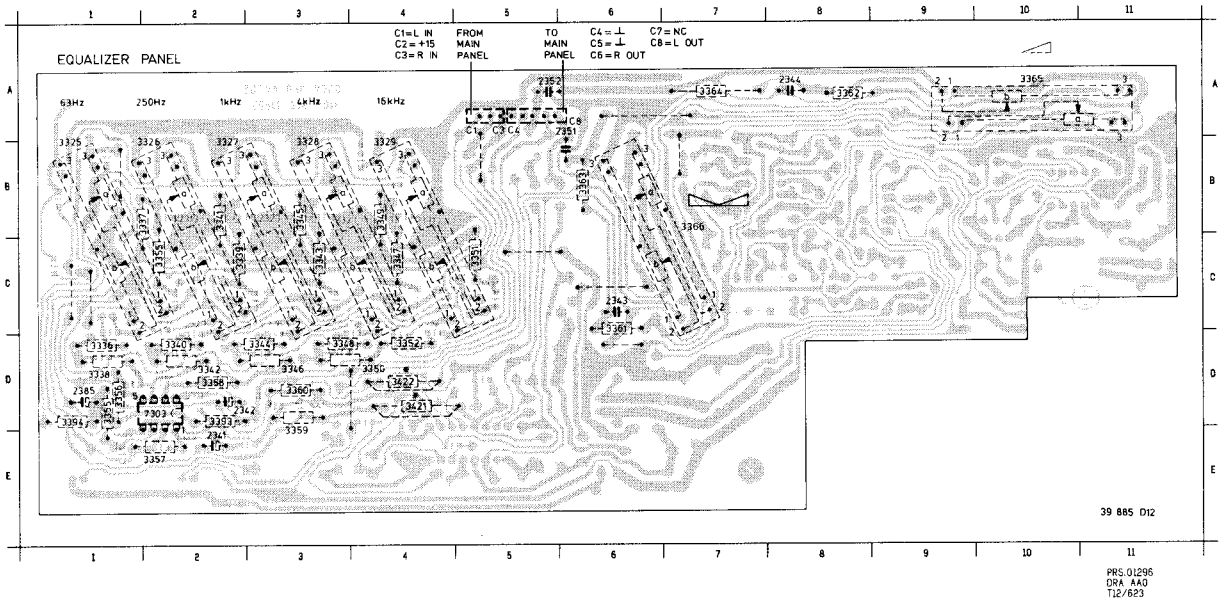
## F1664 ONLY

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2703 | I 6 | 2719 | I 3 | 2773 | H 2 | 2911 | I 7 | 3167 | G12 | 3317 | H13 | 3383 | F10 | 3708 | H 5 | 3724 | G 4 | 3740 | H 3 | 3759 | J 5 | 3904 | I 8 | 3920 | I 8 | 6101 | B13 | 7302 | G14 | 7771 | F 2 | SK 8 | J15 |
| 2704 | H 6 | 2720 | G 3 | 2774 | G 2 | 2912 | I 8 | 3168 | G12 | 3318 | G13 | 3390 | B 9 | 3709 | I 4 | 3725 | H 5 | 3741 | I 3 | 3760 | H 5 | 3905 | J 7 | 3921 | H 7 | 6102 | B13 | 7304 | G 9 | 7772 | F 3 | SK10 | J 3 |
| 2705 | J 4 | 2721 | I 2 | 2775 | G 2 | 2913 | H 7 | 3180 | F12 | 3319 | G13 | 3391 | D10 | 3710 | H 4 | 3726 | G 5 | 3742 | H 2 | 3766 | G 7 | 3906 | J 8 | 3922 | H 8 | 6109 | F12 | 7305 | C 9 | 7773 | G 4 | | |
| 2706 | H 5 | 2722 | G 3 | 2776 | G 2 | 2914 | H 7 | 3181 | G11 | 3320 | G13 | 3392 | E11 | 3711 | I 5 | 3727 | I 5 | 3743 | I 3 | 3767 | F 5 | 3907 | I 6 | 3923 | H 7 | 6301 | B12 | 7306 | F 9 | 7901 | I 7 | | |
| 2707 | I 5 | 2723 | I 3 | 2777 | G 2 | 2915 | J 6 | 3301 | B15 | 3371 | E10 | 3395 | G10 | 3712 | H 5 | 3728 | G 5 | 3744 | H 3 | 3768 | F 4 | 3908 | J 7 | 3924 | H 8 | 6302 | B10 | 7701 | I 5 | 7902 | I 8 | | |
| 2708 | G 5 | 2724 | H 2 | 2778 | F 2 | 2916 | H 6 | 3302 | B15 | 3372 | F10 | 3396 | G 9 | 3713 | I 4 | 3729 | I 2 | 3745 | H 6 | 3769 | G 6 | 3909 | I 7 | 3925 | G 7 | 6303 | G10 | 7702 | H 5 | 7903 | I 6 | | |
| 2709 | I 4 | 2725 | H 3 | 2901 | J 6 | 2917 | H 8 | 3303 | C15 | 3373 | D10 | 3397 | H 9 | 3714 | G 4 | 3730 | G 3 | 3746 | G 5 | 3770 | J 2 | 3910 | I 7 | 3926 | G 7 | 6304 | G 9 | 7703 | I 4 | 7904 | I 7 | | |
| 2710 | G 4 | 2726 | J 4 | 2902 | J 8 | 3155 | H12 | 3304 | C15 | 3375 | D 9 | 3398 | H 9 | 3715 | I 4 | 3731 | J 3 | 3747 | H 6 | 3771 | H12 | 3911 | H 7 | 3927 | G 7 | 6701 | G 6 | 7704 | H 4 | 7905 | I 6 | | |
| 2711 | H 4 | 2727 | H 4 | 2903 | J 7 | 3156 | G11 | 3305 | G15 | 3376 | E 9 | 3401 | B10 | 3716 | G 4 | 3732 | F 3 | 3748 | G 7 | 3772 | H 2 | 3912 | I 7 | 3928 | H 7 | 6710 | G 7 | 7705 | I 3 | 7906 | H 7 | | |
| 2712 | G 4 | 2728 | G 4 | 2904 | I 8 | 3157 | F11 | 3306 | F15 | 3377 | D 9 | 3701 | J 5 | 3717 | H 4 | 3733 | J 3 | 3749 | G 6 | 3773 | G 2 | 3913 | H 7 | 3929 | H14 | 6711 | F 5 | 7706 | H 4 | 7907 | G 6 | | |
| 2713 | H 5 | 2729 | H 6 | 2905 | I 6 | 3158 | F11 | 3309 | H15 | 3378 | E 9 | 3702 | H 5 | 3718 | H 4 | 3734 | F 3 | 3750 | G 6 | 3774 | F 4 | 3914 | H 7 | 3930 | H14 | 6712 | G 5 | 7707 | I 2 | 7908 | H 7 | | |
| 2714 | G 5 | 2730 | G 6 | 2906 | J 7 | 3159 | G10 | 3310 | H15 | 3379 | C 9 | 3703 | I 5 | 3719 | I 5 | 3735 | I 2 | 3751 | J 4 | 3775 | F 2 | 3915 | I 6 | 3931 | J 6 | 6713 | F 5 | 7708 | H 2 | SK 1 | J10 | | |
| 2715 | I 5 | 2769 | G 5 | 2907 | I 7 | 3161 | G11 | 3313 | H13 | 3380 | E10 | 3704 | H 5 | 3720 | G 5 | 3736 | G 3 | 3753 | J 3 | 3776 | G 2 | 3916 | I 7 | 3940 | F 7 | 7108 | G10 | 7709 | I 3 | SK 3 | J11 | | |
| 2716 | G 5 | 2770 | H 2 | 2908 | I 7 | 3162 | G11 | 3314 | G14 | 3381 | C10 | 3705 | I 4 | 3721 | I 4 | 3737 | I 2 | 3754 | H 4 | 3901 | I 6 | 3917 | I 6 | 5123 | G11 | 7110 | G12 | 7710 | H 3 | SK 5 | J13 | | |
| 2717 | H 3 | 2771 | F 3 | 2909 | I 6 | 3163 | G12 | 3315 | H13 | 3382 | E 9 | 3706 | H 4 | 3722 | H 4 | 3738 | G 3 | 3755 | J 5 | 3902 | I 7 | 3918 | H 6 | 5123 | G11 | 7111 | G12 | 7711 | H 7 | SK 6 | J13 | | |
| 2718 | G 3 | 2772 | J 2 | 2910 | I 7 | 3164 | G12 | 3316 | G13 | 3383 | C10 | 3707 | I 6 | 3723 | H 5 | 3739 | H 3 | 3756 | J 6 | 3903 | I 7 | 3919 | I 7 | 5751 | H 2 | 7301 | H13 | 7712 | G 5 | SK 7 | J14 | | |

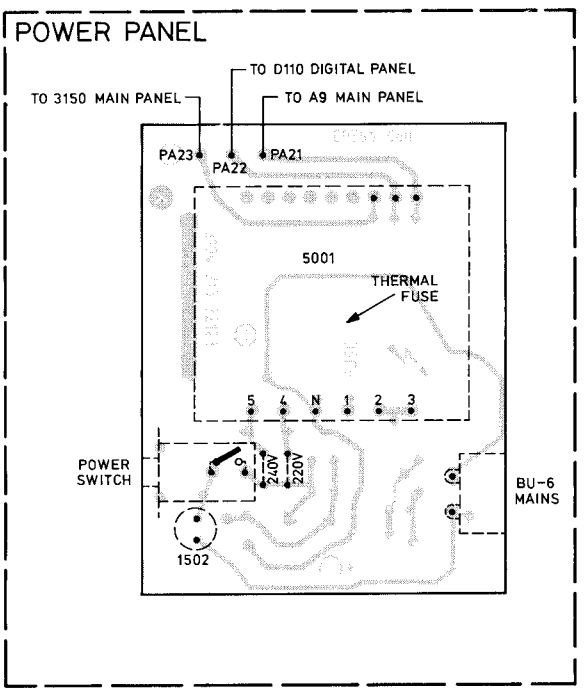


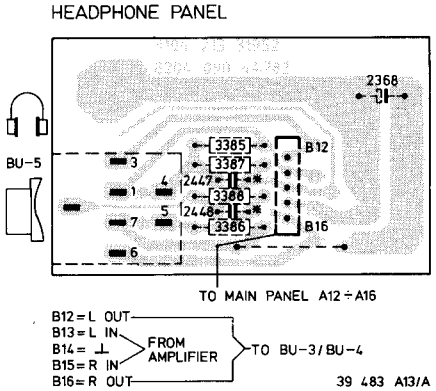

PRS.01574
DRA AAD
T12/633

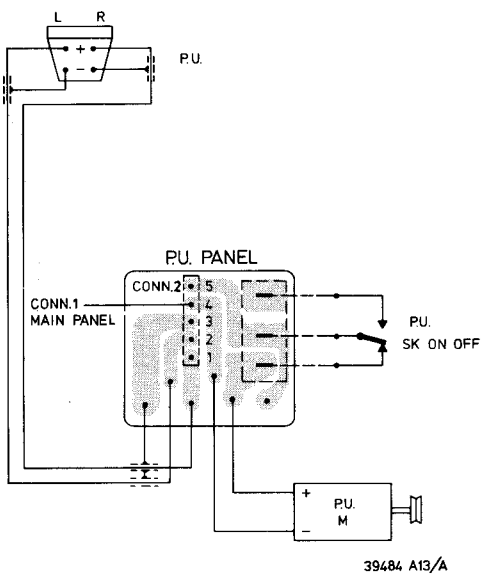
2315 C 2 2321 C 3 2326 C 3 2332 D 4 2339 E 2 2346 D 1 2441 D 3 3325 A 1 3336 D 1 3342 D 2 3348 D 3 3356 D 1 3362 A 8 3394 D 1 7303 D 2
2316 C 1 2322 C 2 2327 B 3 2333 C 5 2340 D 2 2351 A 5 2444 D 2 3326 A 2 3337 B 2 3343 C 3 3349 B 4 3357 E 2 3363 A 6 3398 E 3
2317 C 2 2323 B 3 2328 D 3 2335 L 4 2341 E 2 2352 A 5 3321 C 2 3327 A 2 3338 D 1 3344 D 3 3350 D 4 3358 D 2 3364 A 7 3421 D 4
2318 C 1 2324 D 2 2329 C 4 2336 C 4 2342 D 3 2385 D 1 3322 C 2 3328 A 3 3339 C 3 3345 B 3 3351 C 5 3359 E 3 3365 A 10 3422 D 4
2319 B 2 2324 C 4 2330 C 4 2337 B 4 2343 C 6 2437 E 1 3323 A 1 3329 A 4 3340 D 2 3346 D 3 3352 D 4 3360 D 3 3366 B 7 6111 E 2
2320 D 1 2325 C 3 2331 B 4 2338 B 4 2344 A 8 2440 D 3 3324 B 1 3335 C 2 3341 B 2 3347 C 4 3355 D 1 3361 C 6 3393 D 2 6310 E 1




PRS.01296
DRA AAO
T12/623



# F1667 ONLY

**7301/7302**

e = ⊥
b = 0.6 V
c = 5.7 V

**7101**

g = 0 V
s = ⊥
d = 5.7 V

**7109**

| | |
|---|---|
| e = 0.3 V | 0 V |
| b = 1.0 V | 0.3 V |
| c = 6.7 V | 7.4 V |

**7901/7902**

e = 0 V
b = 0.6 V
c = 2.8 V

**7303**

1 = 7.1 V
2 = 7.1 V
3 = 7.1 V
4 = ⊥
5 = 7.1 V
6 = 7.1 V
7 = 7.1 V
8 = 14.4 V

**7103**

e = 1.1 V
b = 1.9 V
c = 6.0 V

**7701/7702**

e = 0 V
b = 0.6 V
c = 2.9 V

**7903/7904**

e = 2.1 V
b = 2.8 V
c = 6.9 V

**7105**

e = 1.4 V
b = 0.6 V
c = 4.0 V

**7703/7704**

e = 2.2 V
b = 2.9 V
c = 6.1 V

**7905/7906**

e = 6.4 V | F | 6.1 V | C
b = 5.9 V | F | 5.4 V | C
c = 6.3 V | F | 6.1 V | C

**7304**

e = 14.4 V
b = 15.6 V
c = 30.6 V

**7305/7306**

1 = 16.9 V
2 = 17.0 V
3 = ⊥
4 = 17.0 V
5 = 34.5 V

**7705/7706**

e = 6.2 V | F | 5.9 V | C
b = 5.8 V | F | 5.3 V | C
c = 6.1 V | F | 5.9 V | C

**7107**

| | |
|---|---|
| 1 = 1.4 V | 0 V |
| 2 = 0.6 V | 1.4 V |
| 3 = 0.6 V | 1.4 V |
| 4 = 5.6 V | 5.9 V |
| 5 = 3.9 V | 5.9 V |
| 6 = 0.7 V | 5.9 V |
| 7 = 5.6 V | 5.9 V |
| 8 = 5.6 V | 5.9 V |
| 9 = 5.5 V | 5.9 V |
| 10 = 5.5 V | 5.9 V |
| 11 = 1.3 V | 1.3 V |
| 12 = 0 V | |
| 13 = 0.7 V | |
| 14 = 5.2 V | 5.6 V |
| 15 = 0 V | |
| 16 = ⊥ | |

**7108**

| | |
|---|---|
| 1 = 3.4 V | |
| 2 = 6.0 V | |
| 3 = 7.4 V | |
| 4 = 6.6 V | 5.6 V |
| 5 = ⊥ | |
| 6 = 12.9 V | |
| 7 = 6.7 V | 7.5 V |
| 8 = 4.1 V | |
| 9 = 4.0 V | |

**7707/7708**

e = 0.4 V
b = 0 V
c = 14.5 V

**7709/7710**

e = 0 V
b = 0.4 V
c = 0 V

**7711/7712**

e = 0 V
b = 0.2 V 0.6 V
c = 0 V

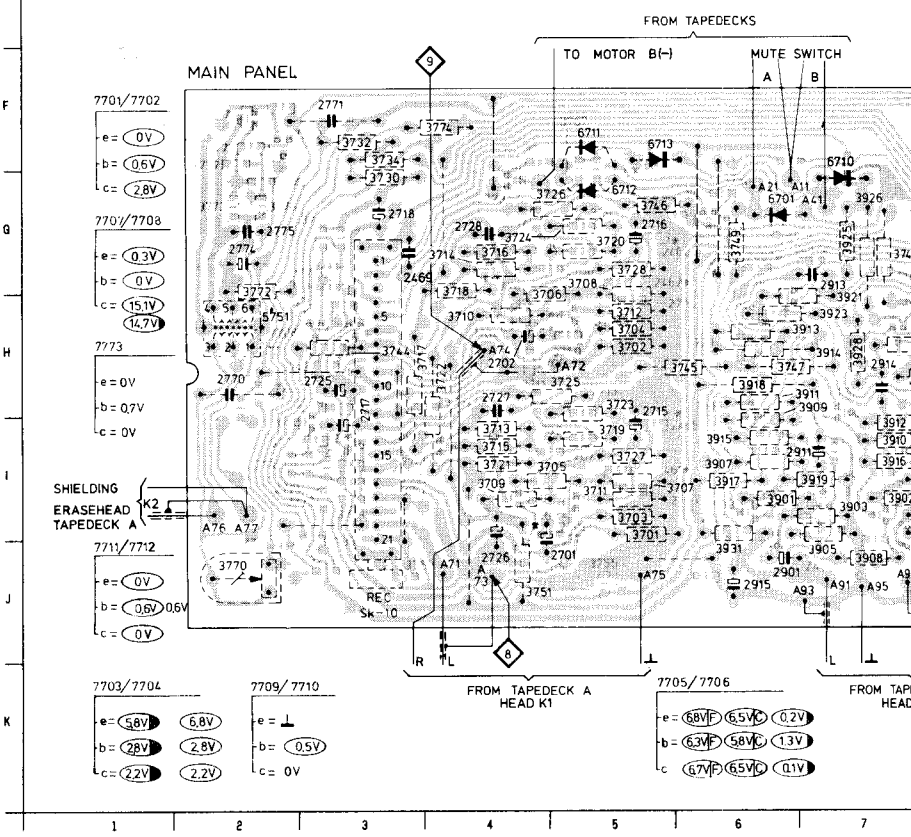
**7771/7772**

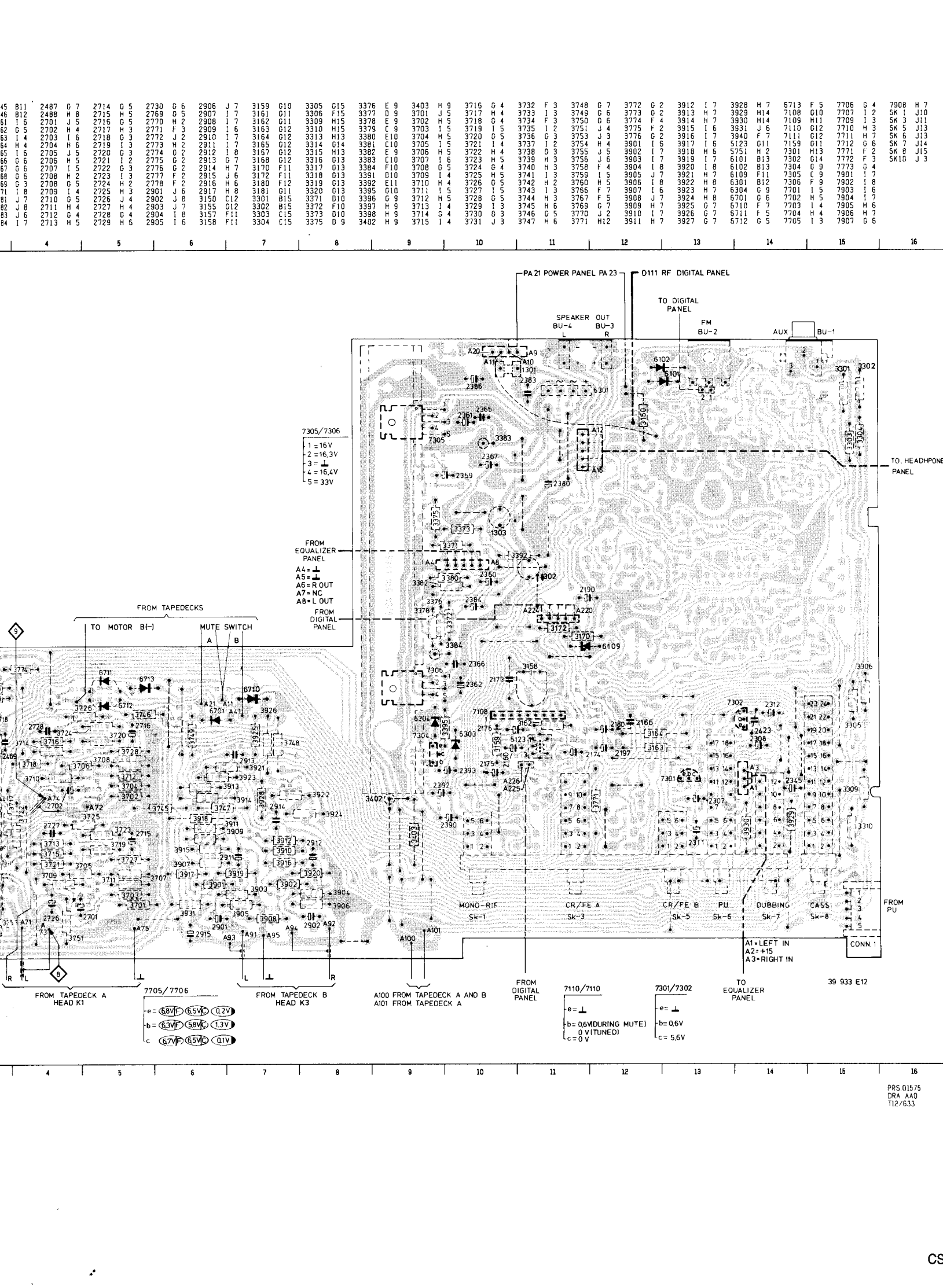
e = 0.6 V
b = 1.2 V
c = 8.3 V

**7773**

e = ⊥
b = 0.7 V
c = 3.2 V

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1301 | B11 | 2301 | G15 | 2353 | B10 | 2382 | B11 | 2445 | B11 | 2487 | G 7 | 2714 | G 5 | 2730 | G 6 | 2906 | J 7 | 3159 | G10 |
| 1302 | E11 | 2302 | I15 | 2354 | F10 | 2383 | B11 | 2446 | B12 | 2488 | H 8 | 2715 | H 5 | 2769 | G 5 | 2907 | I 7 | 3161 | G11 |
| 1303 | D10 | 2303 | F15 | 2355 | D 9 | 2384 | E10 | 2461 | I 6 | 2701 | J 5 | 2716 | G 5 | 2770 | H 2 | 2908 | I 7 | 3162 | G11 |
| 2104 | B14 | 2304 | F15 | 2356 | F 9 | 2386 | B10 | 2462 | G 5 | 2702 | H 4 | 2717 | H 3 | 2771 | F 3 | 2909 | I 6 | 3163 | G12 |
| 2158 | H11 | 2305 | H13 | 2358 | F 9 | 2387 | B 9 | 2463 | I 4 | 2703 | I 6 | 2718 | G 3 | 2772 | J 2 | 2910 | I 7 | 3164 | G12 |
| 2160 | G10 | 2306 | G14 | 2359 | C10 | 2390 | H10 | 2464 | H 4 | 2704 | H 6 | 2719 | I 3 | 2773 | H 2 | 2911 | I 7 | 3165 | G12 |
| 2166 | G12 | 2307 | H13 | 2360 | E10 | 2391 | G 9 | 2465 | I 6 | 2705 | J 5 | 2720 | G 3 | 2774 | G 2 | 2912 | I 8 | 3167 | G12 |
| 2173 | F10 | 2308 | G14 | 2361 | C10 | 2392 | H 9 | 2466 | G 6 | 2706 | H 5 | 2721 | I 2 | 2775 | G 2 | 2913 | G 7 | 3168 | G12 |
| 2174 | G12 | 2309 | H13 | 2362 | F10 | 2393 | H10 | 2467 | G 6 | 2707 | I 5 | 2722 | G 3 | 2776 | G 2 | 2914 | H 7 | 3170 | F11 |
| 2175 | G10 | 2310 | G14 | 2363 | C 9 | 2423 | G14 | 2468 | G 6 | 2708 | H 2 | 2723 | I 3 | 2777 | F 2 | 2915 | J 6 | 3172 | F11 |
| 2176 | G10 | 2311 | I13 | 2364 | E 9 | 2426 | B15 | 2469 | G 3 | 2708 | G 5 | 2724 | H 2 | 2778 | F 2 | 2916 | H 6 | 3180 | F12 |
| 2177 | G11 | 2312 | G14 | 2365 | C10 | 2427 | B15 | 2471 | I 8 | 2709 | I 4 | 2725 | H 3 | 2901 | J 6 | 2917 | H 8 | 3181 | G11 |
| 2178 | G11 | 2313 | G13 | 2366 | F10 | 2428 | I15 | 2481 | J 7 | 2710 | G 5 | 2726 | J 4 | 2902 | J 8 | 3150 | C12 | 3301 | B15 |
| 2180 | G12 | 2314 | H15 | 2367 | C10 | 2429 | I15 | 2482 | J 8 | 2711 | H 4 | 2727 | H 4 | 2903 | J 7 | 3155 | G12 | 3302 | B15 |
| 2190 | E11 | 2337 | C 9 | 2380 | D11 | 2434 | H14 | 2483 | J 6 | 2712 | G 4 | 2728 | G 4 | 2904 | I 8 | 3157 | F11 | 3303 | C15 |
| 2197 | G12 | 2345 | H14 | 2381 | B11 | 2435 | H13 | 2484 | I 7 | 2713 | H 5 | 2729 | H 6 | 2905 | I 6 | 3158 | F11 | 3304 | C15 |

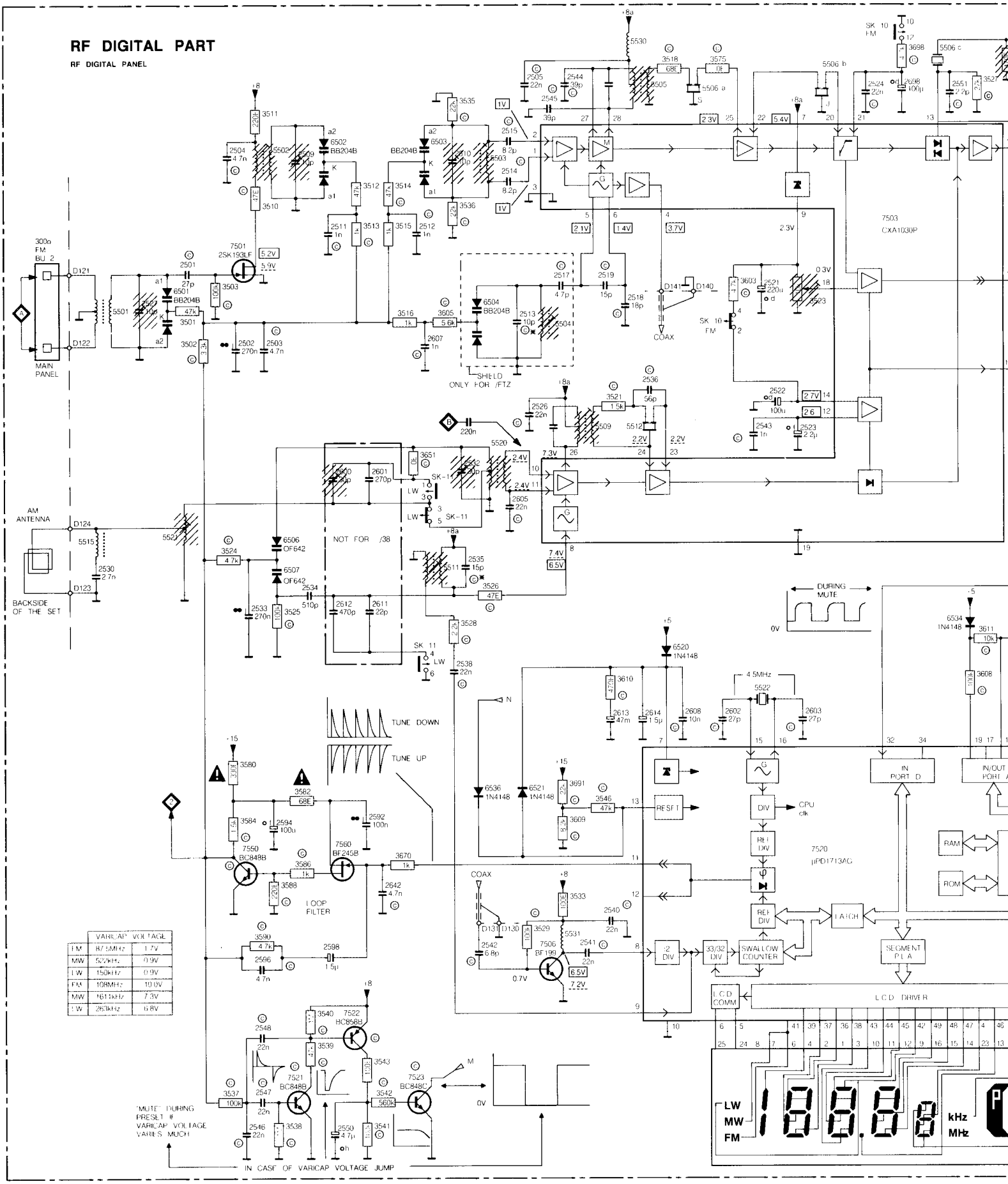



PA 21 POWER PANEL PA 23
D111 RF DIGITAL PANEL
TO DIGITAL PANEL
SPEAKER OUT
BU-4 L
BU-3 R
FM BU-2
AUX
BU-1
TO. HEADHPONE PANEL
7305/7306
1 = 16 V
2 = 16,3 V
3 = ⊥
4 = 16,4 V
5 = 33 V
FROM EQUALIZER PANEL
A4 = ⊥
A5 = ⊥
A6 = R OUT
A7 = NC
A8 = L OUT
FROM DIGITAL PANEL
FROM TAPEDECKS
TO MOTOR B(–)
MUTE SWITCH
A
B
MONO-RIF Sk-1
CR/FE A Sk-3
CR/FE B Sk-5
PU Sk-6
DUBBING Sk-7
CASS Sk-8
FROM PU
CONN. 1
A1 = LEFT IN
A2 = +15
A3 = RIGHT IN
39 933 E12
FROM TAPEDECK A HEAD K1
7705/7706
e = 6,8V F 6,5V C 0,2V
b = 6,3V F 5,8V C 1,3V
c 6,7V F 6,5V C 0,1V
FROM TAPEDECK B HEAD K3
A100 FROM TAPEDECK A AND B
A101 FROM TAPEDECK A
FROM DIGITAL PANEL
7110/7110
e = ⊥
b = 0,6V (DURING MUTE)
0 V (TUNED)
c = 0 V
7301/7302
e = ⊥
b = 0,6 V
c = 5,6 V
TO EQUALIZER PANEL
PRS.01575
DRA AA0
T12/633

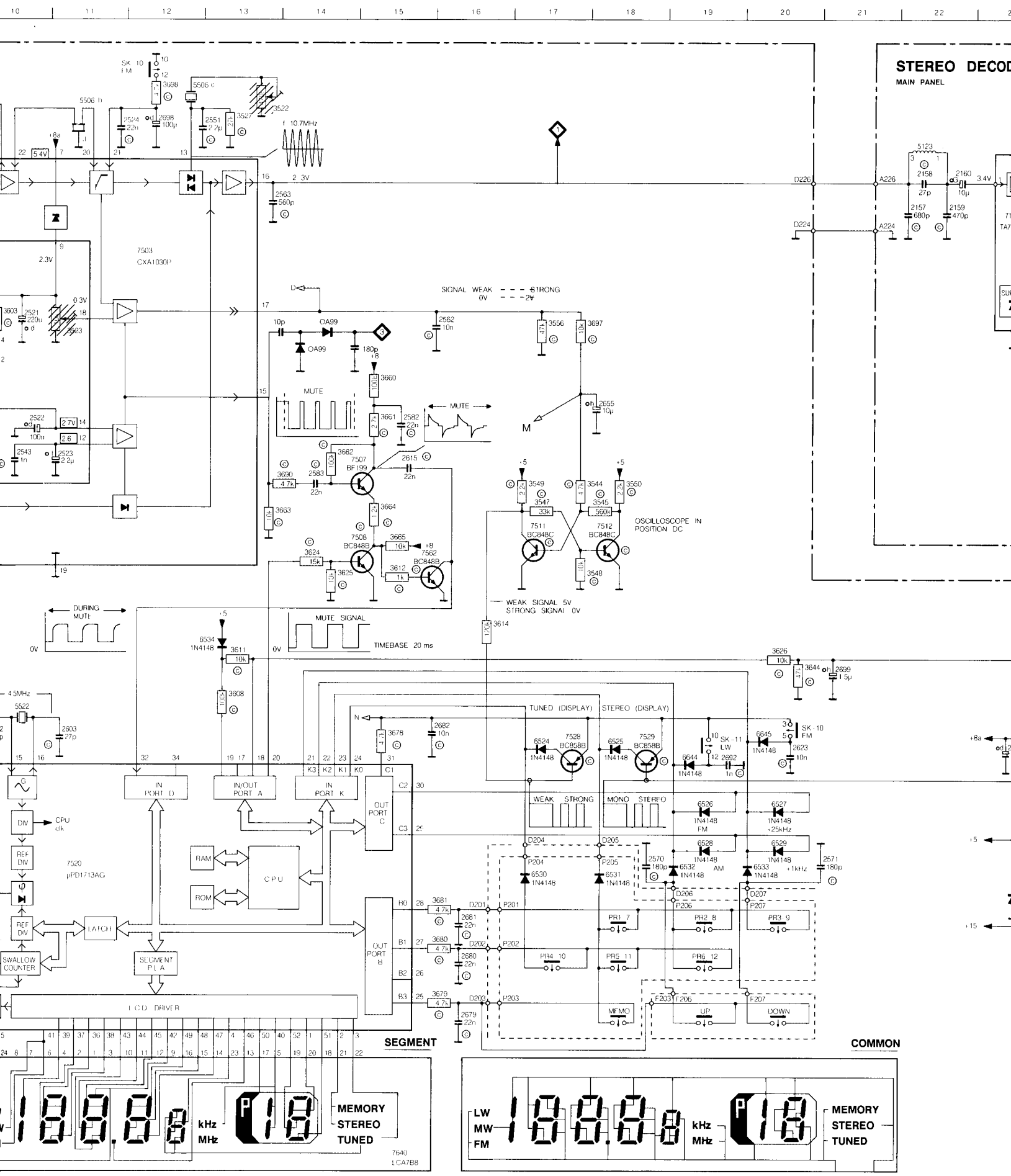
| | | |

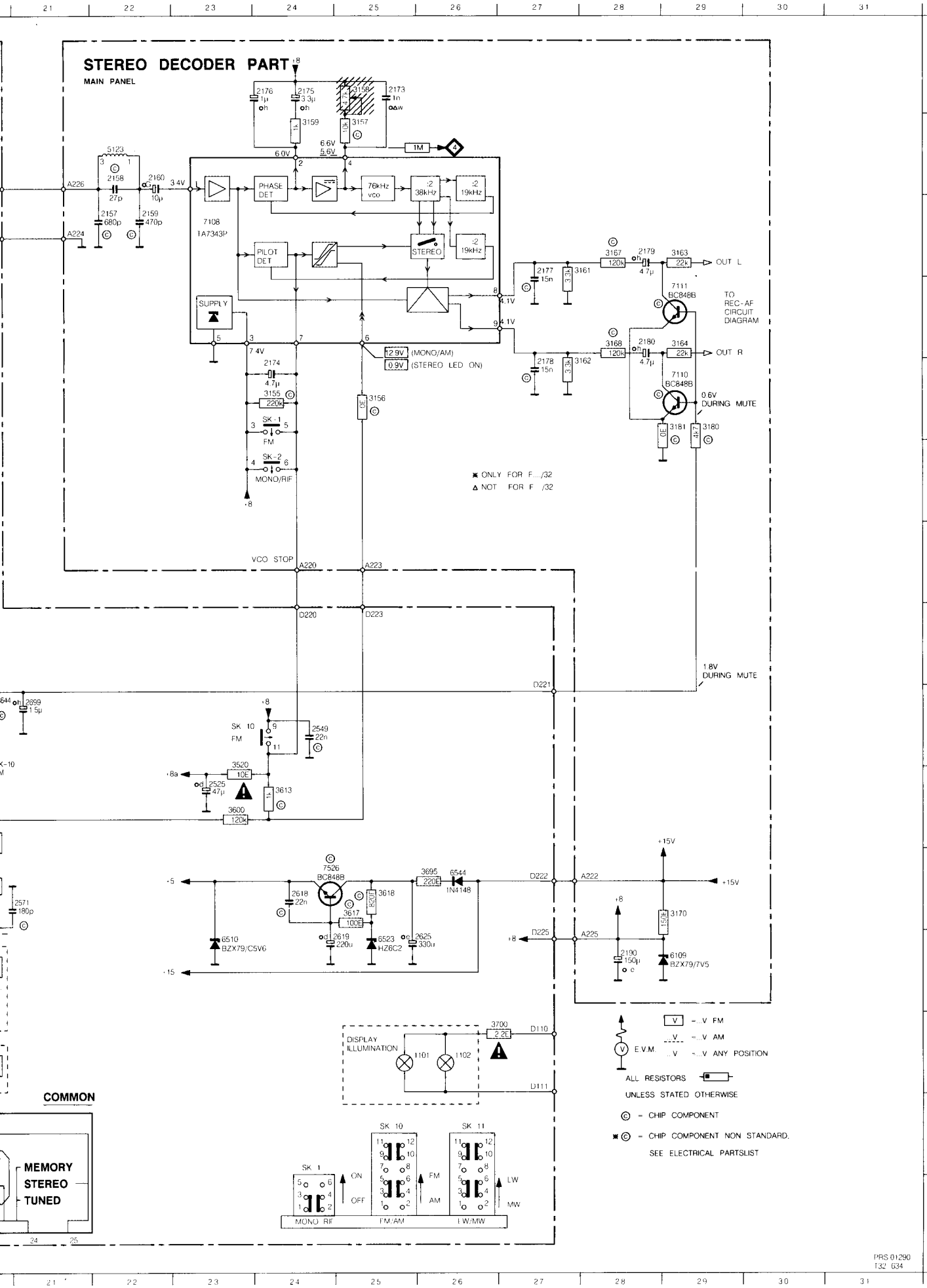
# RF DIGITAL PART

RF DIGITAL PANEL




| | VARICAP VOLTAGE | |
|---|---|---|
| FM | 87.5MHz | 1.7V |
| MW | 522kHz | 0.9V |
| LW | 150kHz | 0.9V |
| FM | 108MHz | 10.0V |
| MW | 1611kHz | 7.3V |
| LW | 263kHz | 6.8V |

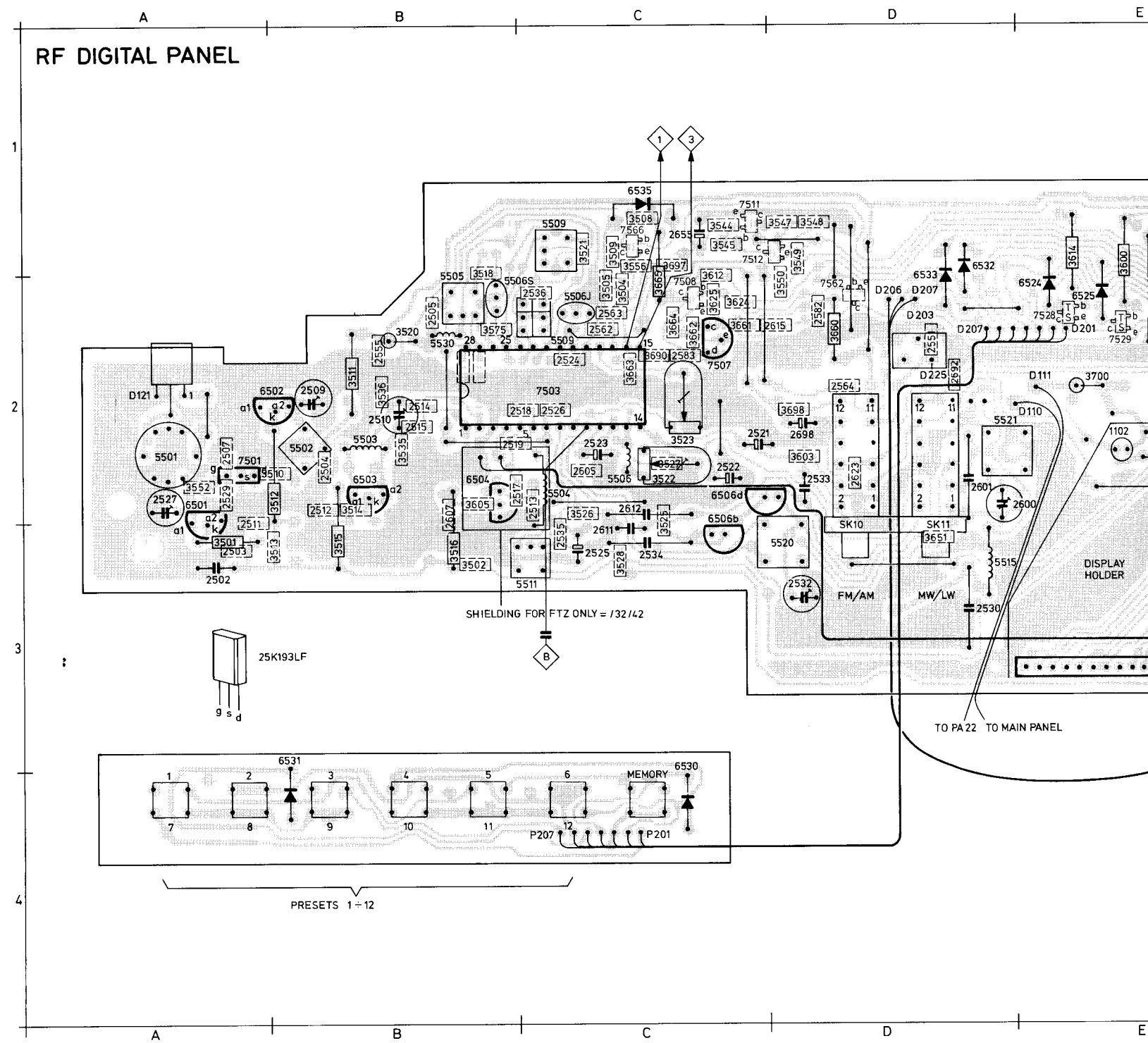

STEREO DECOD
MAIN PANEL
7503
CXA1030P
7520
μPD1713AC
SIGNAL WEAK - - - STRONG
0V - - - 2V
MUTE
DURING MUTE
MUTE SIGNAL
TIMEBASE 20 ms
WEAK SIGNAL 5V
STRONG SIGNAL 0V
OSCILLOSCOPE IN POSITION DC
TUNED (DISPLAY)
STEREO (DISPLAY)
WEAK
STRONG
MONO
STEREO
IN PORT D
IN/OUT PORT A
IN PORT K
OUT PORT C
OUT PORT B
CPU
RAM
ROM
LATCH
SEGMENT P.I.A
SWALLOW COUNTER
LCD DRIVER
SEGMENT
COMMON
MEMORY
STEREO
TUNED
LW
MW
FM
kHz
MHz
MEMO
UP
DOWN
7640
1CA7B8



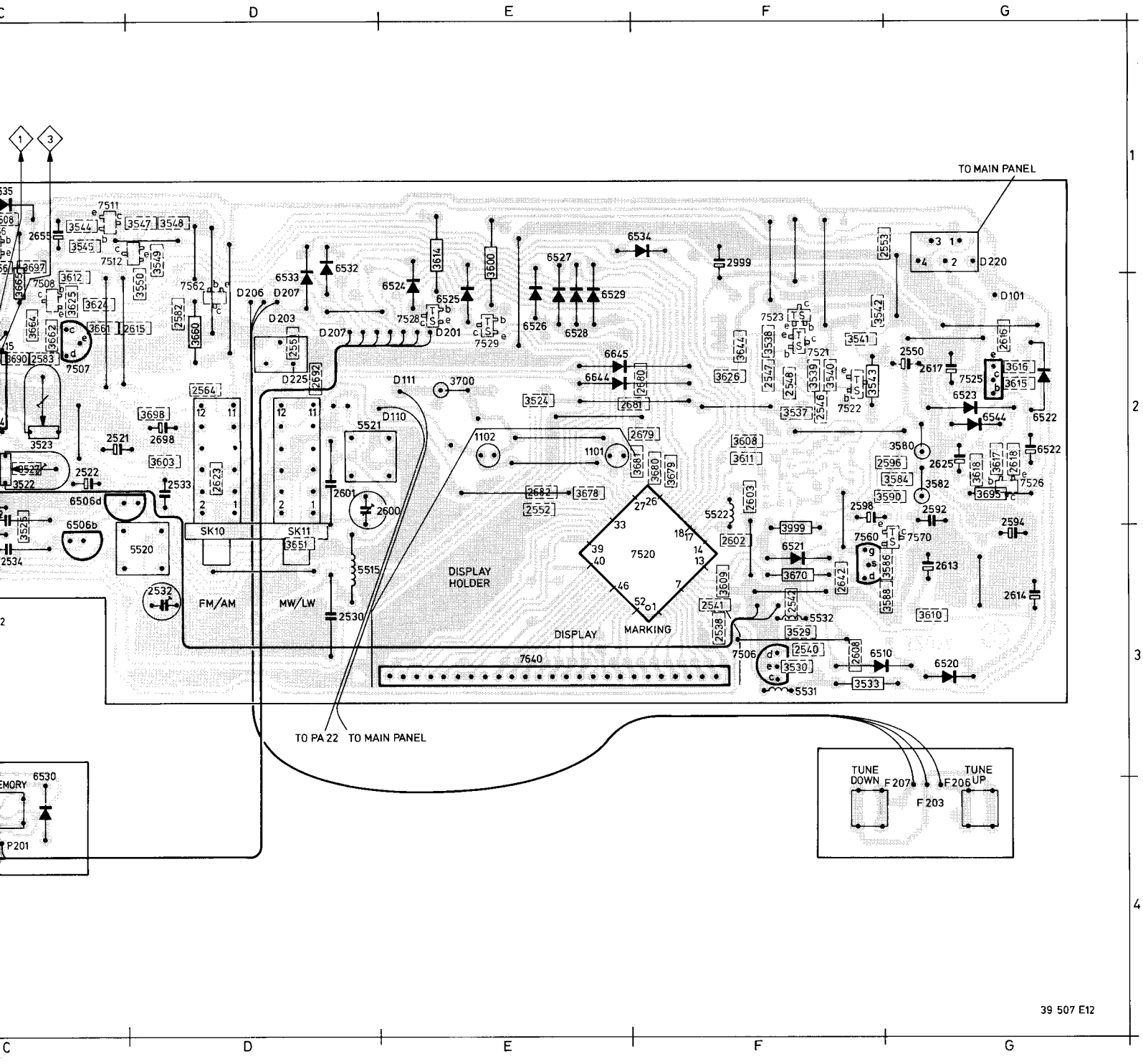

| | | | |
|---|---|---|---|
| | 1101 | M26 | 3580 J 4 |
| | 1102 | M26 | 3582 J 4 |
| | 2157 | C22 | 3584 K 4 |
| | 2158 | B22 | 3586 K 4 |
| | 2159 | C22 | 3588 L 4 |
| | 2160 | B22 | 3590 L 4 |
| A | 2173 | A25 | 3600 J23 |
| | 2174 | E24 | 3603 E10 |
| | 2175 | A24 | 3605 D 6 |
| | 2176 | A24 | 3608 I 13 |
| | 2177 | C27 | 3609 K 8 |
| | 2178 | E27 | 3610 I 8 |
| | 2179 | C28 | 3611 H13 |
| | 2180 | D28 | 3612 G15 |
| | 2190 | L28 | 3613 J24 |
| B | 2501 | D 3 | 3614 H16 |
| | 2502 | E 4 | 3617 K25 |
| | 2503 | E 4 | 3618 K25 |
| | 2504 | B 4 | 3624 G14 |
| | 2505 | B 7 | 3625 G14 |
| | 2509 | B 4 | 3626 H20 |
| | 2510 | B 6 | 3644 I 20 |
| | 2511 | C 5 | 3651 F 6 |
| | 2512 | C 6 | 3660 E15 |
| | 2513 | D 7 | 3661 E15 |
| C | 2514 | C 7 | 3662 F14 |
| | 2515 | B 7 | 3663 J14 |
| | 2517 | D 8 | 3664 G15 |
| | 2518 | D 9 | 3665 G15 |
| | 2519 | D 8 | 3670 K 6 |
| | 2521 | E10 | 3678 J15 |
| | 2522 | E10 | 3679 M16 |
| | 2523 | F11 | 3680 L16 |
| | 2524 | B12 | 3681 L16 |
| D | 2525 | J23 | 3690 F14 |
| | 2526 | F 7 | 3691 J 8 |
| | 2527 | D 2 | 3695 K26 |
| | 2530 | H 2 | 3697 E18 |
| | 2532 | F 6 | 3698 A12 |
| | 2533 | H 4 | 3700 M27 |
| | 2534 | H 4 | 5123 B22 |
| | 2535 | H 7 | 5501 D 2 |
| | 2536 | E 9 | 5502 B 4 |
| E | 2538 | I 6 | 5503 C 7 |
| | 2540 | L 8 | 5504 E 8 |
| | 2541 | L 8 | 5505 B 9 |
| | 2542 | L 7 | 5509 F 8 |
| | 2543 | F10 | 5511 H 6 |
| | 2544 | B 8 | 5512 F 9 |
| | 2545 | B 7 | 5515 G 2 |
| | 2546 | O 4 | 5520 F 7 |
| | 2547 | N 4 | 5521 G 3 |
| | 2548 | M 4 | 5522 I 10 |
| F | 2549 | I 24 | 5530 A 9 |
| | 2550 | O 5 | 5531 L 8 |
| | 2551 | B13 | 6109 L28 |
| | 2562 | E16 | 6501 D 3 |
| | 2563 | C14 | 6502 B 5 |
| | 2570 | K18 | 6503 B 6 |
| | 2571 | K21 | 6504 D 7 |
| | 2582 | E15 | 6506 G 4 |
| | 2583 | F14 | 6507 H 4 |
| G | 2592 | K 5 | 6510 L23 |
| | 2594 | K 4 | 6520 I 9 |
| | 2596 | M 4 | 6521 J 7 |
| | 2598 | L 5 | 6523 L25 |
| | 2600 | F 5 | 6524 J17 |
| | 2601 | F 5 | 6525 J18 |
| | 2602 | I 10 | 6526 J19 |
| | 2603 | I 11 | 6527 J20 |
| | 2605 | G 7 | 6528 K19 |
| H | 2607 | E 6 | 6529 K20 |
| | 2608 | I 9 | 6530 K17 |
| | 2611 | H 5 | 6531 K18 |
| | 2612 | H 5 | 6532 K19 |
| | 2613 | J 8 | 6533 K20 |
| | 2614 | J 9 | 6534 H13 |
| | 2615 | F15 | 6536 J 7 |
| | 2618 | K24 | 6544 K26 |
| | 2619 | L25 | 6644 J19 |
| | 2623 | J20 | 6645 J20 |
| I | 2625 | L26 | 7108 C23 |
| | 2642 | L 5 | 7110 E29 |
| | 2655 | E18 | 7111 D29 |
| | 2679 | M16 | 7501 D 4 |
| | 2680 | L16 | 7503 C12 |
| | 2681 | L16 | 7506 L 7 |
| | 2682 | I 16 | 7507 F14 |
| | 2692 | J19 | 7508 G14 |
| | 2698 | B12 | 7511 G17 |
| J | 2699 | I 21 | 7512 G18 |
| | 3155 | E24 | 7520 K11 |
| | 3156 | E25 | 7521 N 4 |
| | 3157 | B25 | 7522 M 5 |
| | 3158 | A25 | 7523 N 6 |
| | 3159 | B24 | 7526 K24 |
| | 3161 | C28 | 7528 J17 |
| | 3162 | E28 | 7529 J18 |
| | 3163 | C29 | 7550 K 4 |
| | 3164 | D29 | 7560 K 5 |
| K | 3167 | C28 | 7562 G15 |
| | 3168 | D28 | 7640 O15 |
| | 3170 | K28 | SK-1 E24 |
| | 3180 | E29 | SK 10 I 20 |
| | 3181 | E29 | SK-10 A12 |
| | 3501 | F 3 | SK-10 E 9 |
| | 3502 | E 3 | SK 11 G 6 |
| | 3503 | D 3 | SK 11 G 6 |
| | 3510 | C 4 | SK 11 I 6 |
| L | 3511 | B 4 | SK 11 J19 |
| | 3512 | C 5 | SK 2 F24 |
| | 3513 | C 5 | |
| | 3514 | C 6 | |
| | 3515 | C 6 | |
| | 3516 | D 6 | |
| | 3518 | A 9 | |
| | 3520 | I 23 | |
| | 3521 | F 8 | |
| | 3522 | A13 | |
| M | 3523 | E11 | |
| | 3524 | G 3 | |
| | 3525 | H 4 | |
| | 3526 | H 7 | |
| | 3527 | B13 | |
| | 3528 | H 6 | |
| | 3529 | L 7 | |
| | 3533 | L 8 | |
| | 3535 | B 6 | |
| N | 3536 | C 6 | |
| | 3537 | N 3 | |
| | 3538 | O 4 | |
| | 3539 | N 5 | |
| | 3540 | M 5 | |
| | 3541 | O 5 | |
| | 3542 | N 5 | |
| | 3543 | N 5 | |
| | 3544 | F18 | |
| O | 3545 | G18 | |
| | 3546 | K 8 | |
| | 3547 | G17 | |
| | 3548 | G18 | |
| | 3549 | F17 | |
| | 3550 | F18 | |
| | 3556 | F17 | |
| | 3575 | A10 | |

PRS 01290
T32 634

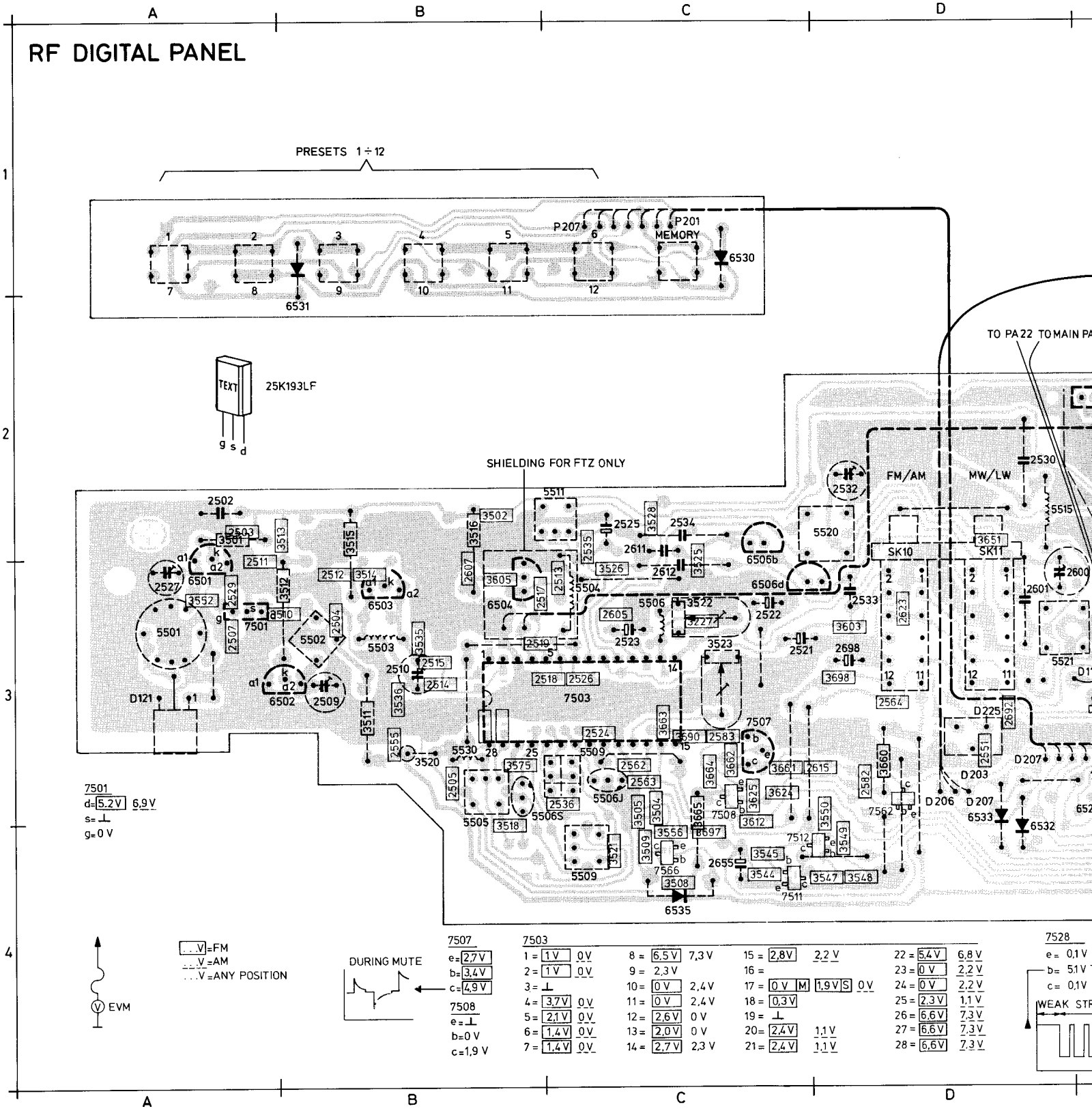
# RF DIGITAL PANEL



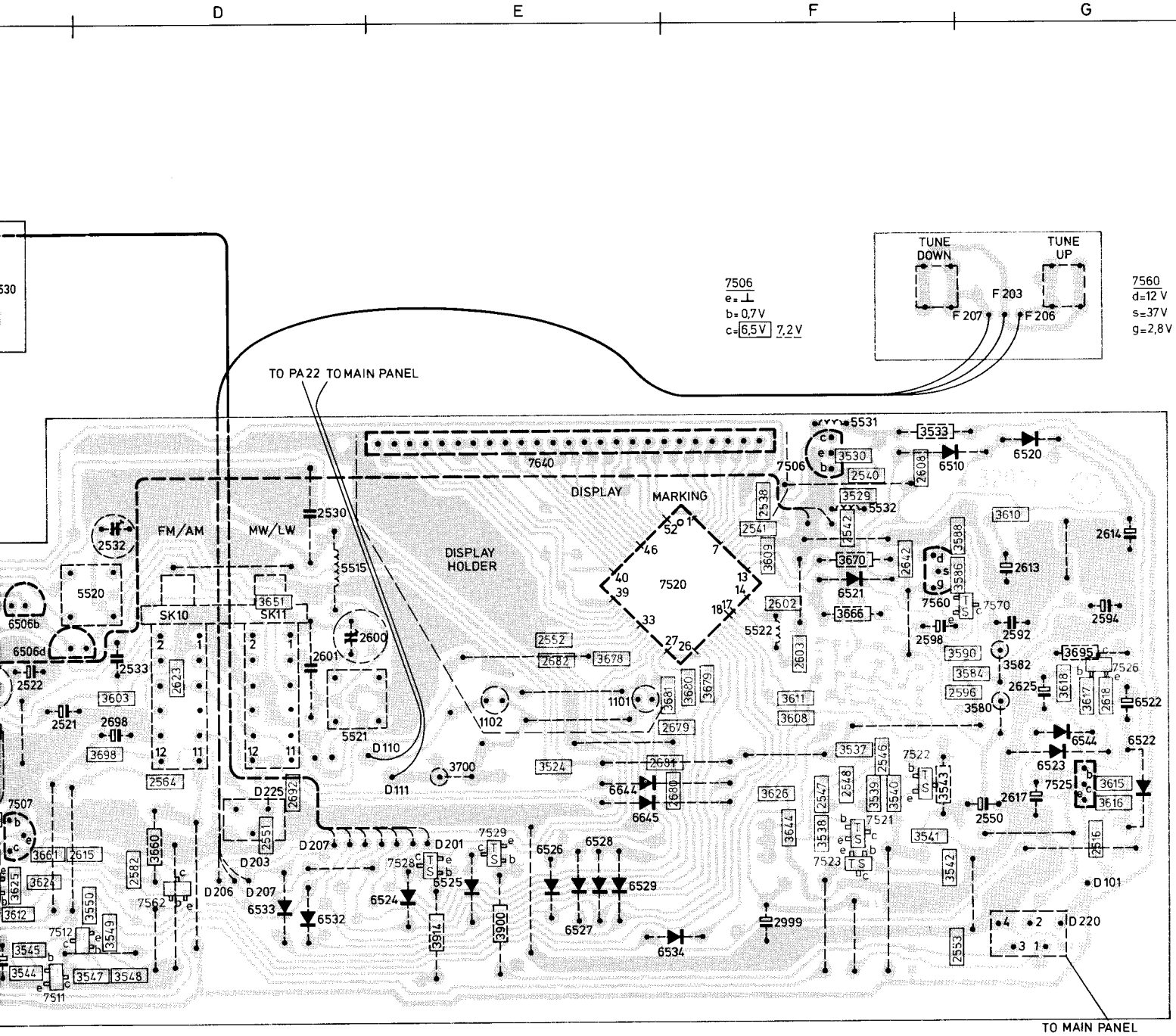
**F1664 + F1667**


TO MAIN PANEL
DISPLAY HOLDER
DISPLAY
MARKING
FM/AM
MW/LW
SK10
SK11
TO PA 22
TO MAIN PANEL
TUNE DOWN
TUNE UP
F207
F206
F203
7520
7640
39 507 E12

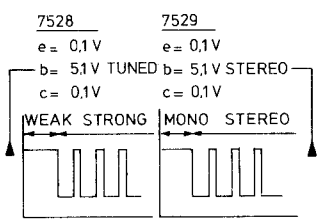
# RF DIGITAL PANEL



**F1664 + F1667**

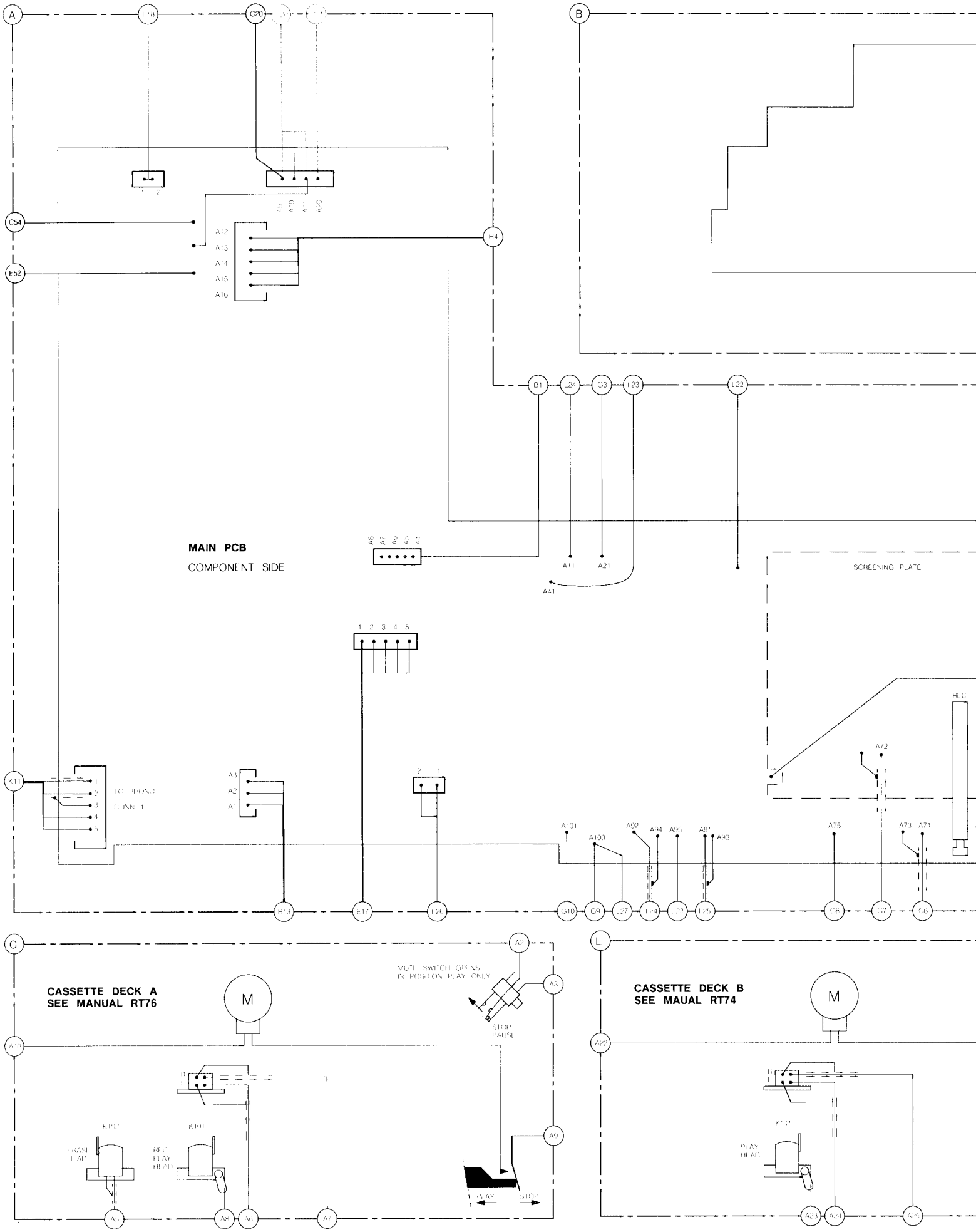



| | | | | | |
|---|---|---|---|---|---|
| 15 = | 2,8 V | 2,2 V | 22 = | 5,4 V | 6,8 V |
| 16 = | | | 23 = | 0 V | 2,2 V |
| 17 = | 0 V M 1,9 V S | 0 V | 24 = | 0 V | 2,2 V |
| 18 = | 0,3 V | | 25 = | 2,3 V | 1,1 V |
| 19 = | ⊥ | | 26 = | 6,6 V | 7,3 V |
| 20 = | 2,4 V | 1,1 V | 27 = | 6,6 V | 7,3 V |
| 21 = | 2,4 V | 1,1 V | 28 = | 6,6 V | 7,3 V |

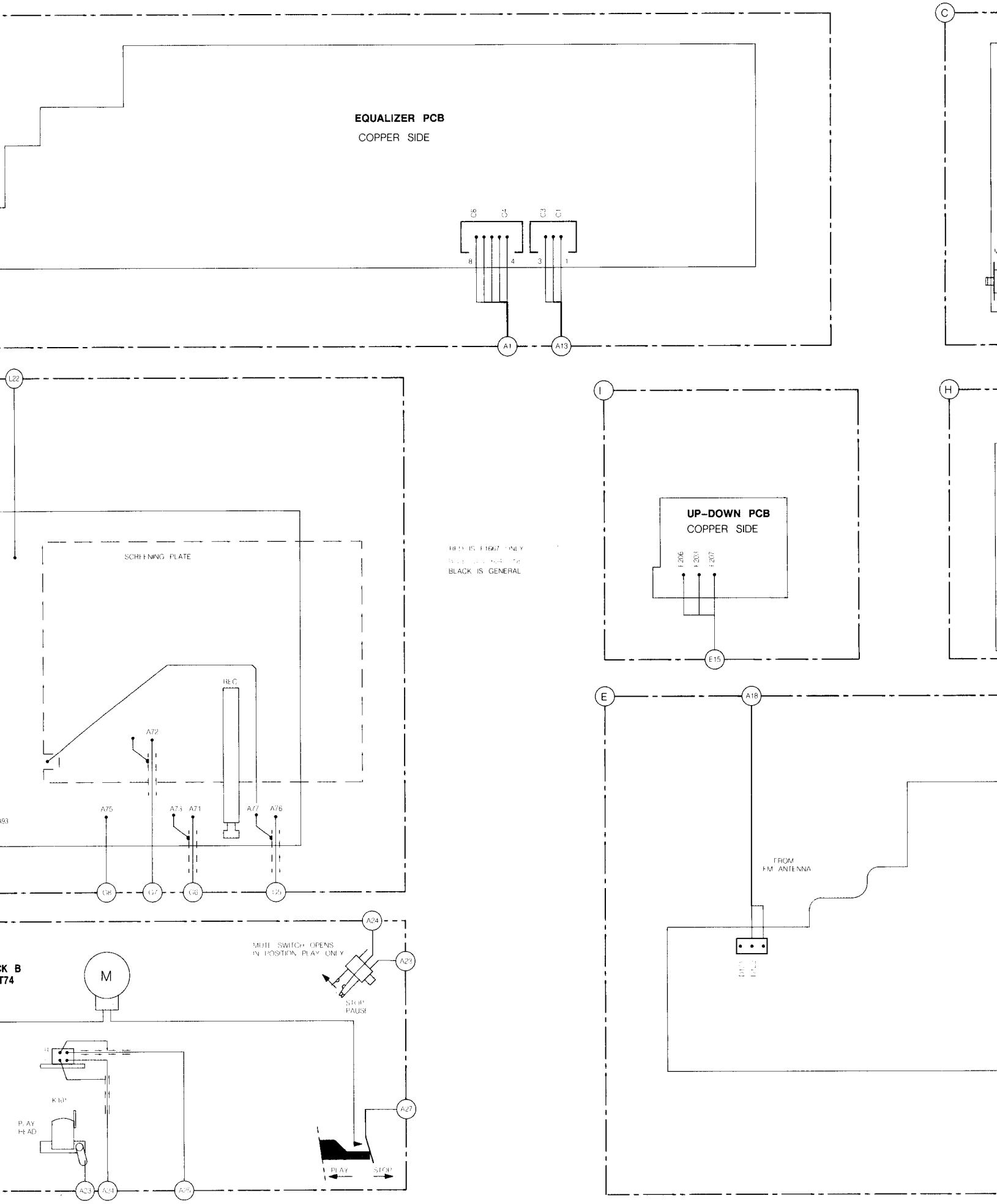


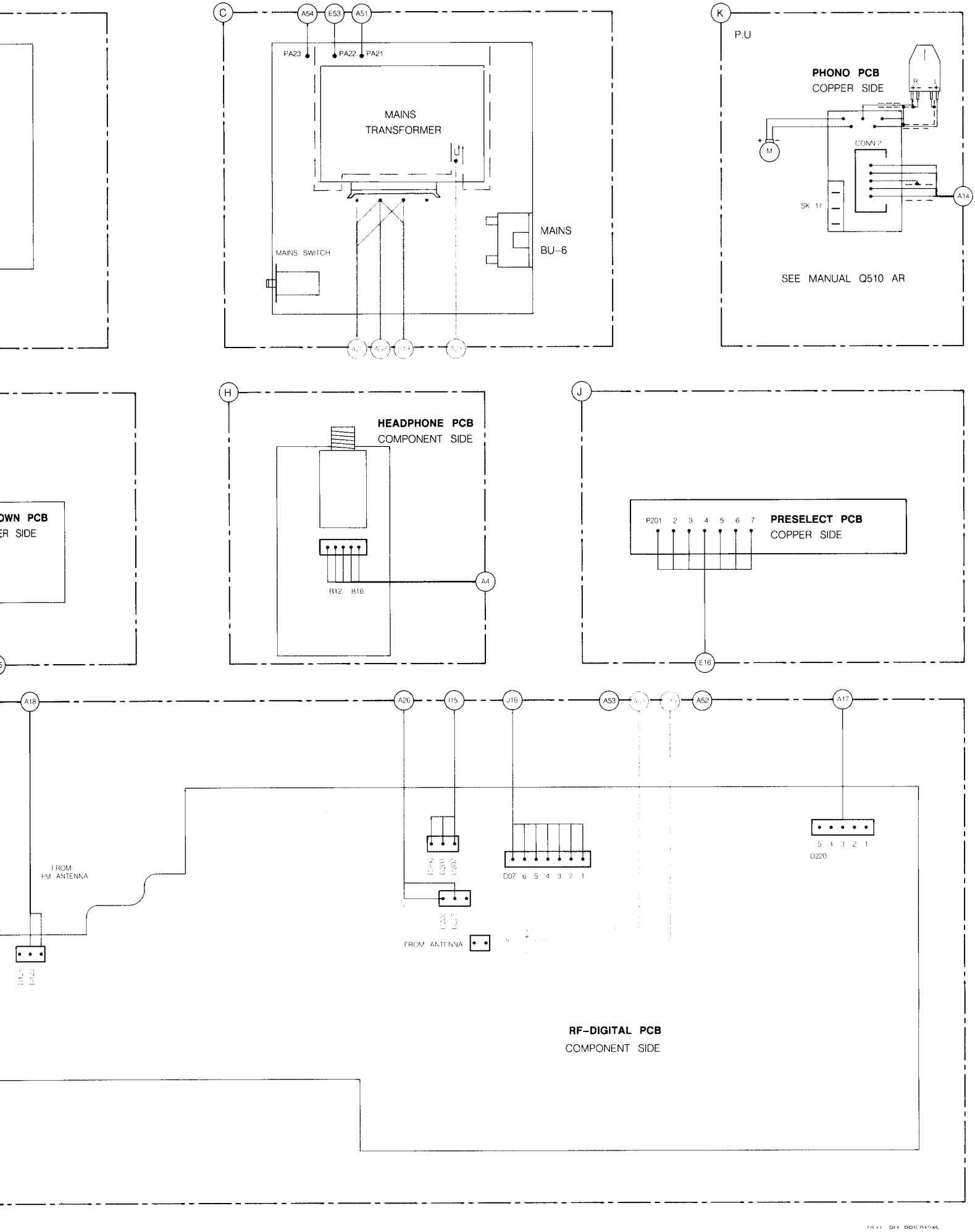

| VARICAP | VOLTAGE | TRANSISTOR 7550 | COLLECTOR |
|---|---|---|---|
| FM | 87,5 MHz | 1,7 V | 108 MHz | 10,0 V |
| MW | 522 kHz | 0,9 V | 1611 kHz | 7,3 V |
| LW | 150 kHz | 0,9 V | 263 kHz | 6,8 V |

39 508 E12


A
B
C54
E52
H4
B1
L24
G3
L23
L22
MAIN PCB
COMPONENT SIDE
A11
A21
A41
SCREENING PLATE
REC
A72
K10
TO PHONO CONN 1
A101
A100
A92
A94
A95
A91
A93
A75
A73
A71
B13
E17
F26
G10
C9
L27
L24
Z2
L25
G6
G7
G8
G
CASSETTE DECK A
SEE MANUAL RT76
M
MUTE SWITCH OPENS IN POSITION PLAY ONLY
STOP PAUSE
PLAY
STOP
L
CASSETTE DECK B
SEE MAUAL RT74
M
PLAY HEAD

# F1664 + F1667


EQUALIZER PCB
COPPER SIDE
C6
C5
C3
C1
8
4
3
1
A1
A13
C
L22
SCREENING PLATE
REC
A72
A75
A73
A71
A77
A76
G6
G7
G8
G5
I
UP-DOWN PCB
COPPER SIDE
I 206
I 203
I 207
E15
H
BLACK IS GENERAL
E
A18
FROM
FM ANTENNA
A24
A23
MUTE SWITCH OPENS
IN POSITION PLAY ONLY
STOP
PAUSE
M
PLAY
HEAD
A27
PLAY
STOP
A23
A21
A25


C
A54
E53
A51
PA23
PA22
PA21
MAINS
TRANSFORMER
MAINS SWITCH
MAINS
BU-6
K
P.U
PHONO PCB
COPPER SIDE
R
L
M
CONN.2
SK 11
A14
SEE MANUAL Q510 AR
H
HEADPHONE PCB
COMPONENT SIDE
A4
B12 B16
J
P201 2 3 4 5 6 7
PRESELECT PCB
COPPER SIDE
E16
A18
A20
I15
J16
A53
A52
A17
FROM
FM ANTENNA
D07 6 5 4 3 2 1
5 4 3 2 1
D220
FROM ANTENNA
RF-DIGITAL PCB
COMPONENT SIDE

## ELECTRICAL MEASUREMENTS AND ADJUSTMENTS
## RECORDER AND RECORD PLAYER

### General conditions recorder

- Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleaned.
- The measurements and adjustments are related to the left-hand channel.
  The corresponding test points and adjusting elements for the right-hand channel are given in brackets.
- The voltages have been measured relative to earth.

### Required test equipment and test cassettes

- LF generator
- AC mV meter
- Wow and flutter meter
- Frequency counter
- Cassette service set 801CSS 4822 395 30078
- Universal test cassette SBC420Fe 4822 397 30071

RECORDER A + B

| Recorder | Adjustment | Cassette | Recorder in position SK | Apply signal to | Measure on | Read on | Adjust with | Adjust to |
|---|---|---|---|---|---|---|---|---|
| A+B | Playback speed Method 1 or Method 2 | 3150 Hz part of SBC420Fe | PLAY | – | Loudspeaker output ◇5 (◇6) | Wow and flutter meter | Trimpotmeter R at the back of the motor | *A |
| | | Test cassette set 801/CSS | PLAY | – | Loudspeaker output BU3-4 | indicator on test set | Trimpotmeter R at the back of the motor | *B |
| A+B | Azimuth R/P head | 8 kHz part of SBC420Fe | PLAY | – | ◇5 (◇6) | AC mV meter or oscilloscope | Left screw on R/P head | Max. output L+R |
| A+B | Playback sensitivity | 315 Hz-0 dB part of SBC420Fe | PLAY | – | ◇5 ◇6 ( ) | AC mV meter | – | 90 mV |
| A | BIAS | SBC420Fe side-2 *C | REC+PLAY | – | ◇8 (◇9) | AC mV meter | 3770 | 9 mV |
| A | Erase osc. | Empty cassette | REC PLAY Cr RIF OFF | | ◇10 | Freq. counter | 5751 | 53 kHz ±5 kHz |
| | | | RIF ON | – | ◇10 | Freq. counter | 5751 | fosc. + 8 kHz ±4 kHz |
| | | | RIF OFF Normal | | ◇10 | DC mV meter | B –3 V ±1 dBc | |
| | | | RIF OFF Cr | | ◇10 | DC mV meter | 19 V ±1 dB =B | |
| A+B | | Rewind recording made with deck A | PLAY | | ◇5 (◇6) | AC mV meter | | See graph Fig. 11 if necessary repeat adjustment *D |

RECORD PLAYER

| Recorder | Adjustment | Cassette | Recorder in position SK | Apply signal to | Measure on | Read on | Adjust with | Adjust to |
|---|---|---|---|---|---|---|---|---|
| | Speed | | SK14 $33^1/_3$ rpm | | | Stroboscope | Trimpotmeter inside motor | $33^1/_3$ rpm |

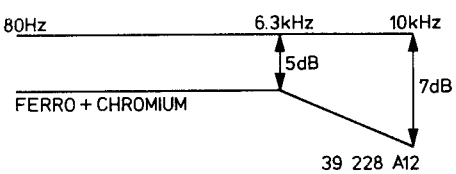



Fig. 11

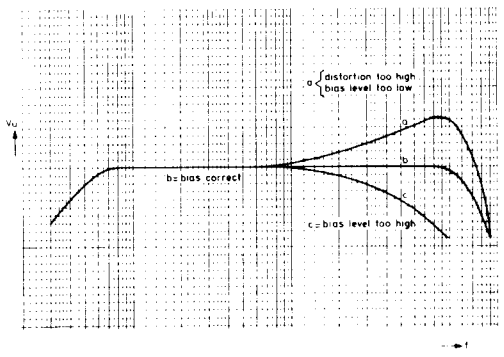



Fig. 12

## (GB) Electrical measurements and adjustments "Recorder"

*A. – The maximum permissible speed deviation is ±0.5%.
Moreover, the wow and flutter value can be read.
– This value should not exceed 0.35%.

*B. – Connect the Service cassette set to the apparatus via one of the loudspeaker connectors.
– Set the apparatus to the play back position with the 50 Hz cassette service set.
– With R at the back of the motor, adjust for minimum variation of the indicator reading.

*C. – If the accuracy requirements are less stringent a high quality ferro (normal) cassette may be used as an alternative.

*D. – If the adjustment is correct the frequency response curve will be similar to curve b in Fig. 12 (distortion ≤ 5%).

## (F) Mesures électriques et réglages "Recorder"

*A. – L'écart de vitesse maximum admissible est de ±0.5%.
La taux de pleurage pourra également être lu lors de cette mesure.
– Cette valeur ne doit pas dépasser 0.35%.

*B. – Relier le jeu de cassette Service à travers un des haut-parleurs à l'appareif.
– Positionner l'appareif en lecture et utiliser la cassette Service de 50 Hz.
– Al'aide de R à l'arrière du moteur, ajuster pour un minimum de variation á l'indication.

*C. – Si de exigences du point de vue de la précision ne zont pas tellement hautes, une cassette ferro (normale) de bonne qualite' suffira.

*D. – Si le réglage est correct, la courbe de réponse sera seuiblable à la courbe b de la Fig. 12 (distorsion ≤ 5%).

## (I) Misure e regolazione elettrische "Recorder"

*A. – La deviazione massima di velocità e ±0.5%.
Inoltre, può essere rilevato il wow e flutter.
– Questo valore non deve eccedure dello 0.35%.

*B. – Collegare lo strumento di servizio al connettore di uscita di una cassa acustica dell'apparecchio..
– Posizionare l'apparecchio in riproduzione e usare la cassetta test a 50 Hz.
– Regolare la velocità del motore (R), per la minima deviazione dello strumento.

## (NL) Elektrische metingen en instellingen "Recorder"

*A. – De hoogst toelaatbare snelheidsafwijking bedraagt ±0.5%.
Tevens kan bij deze meting de jengelwaarde afgelezen worden.
– Deze waarde mag niet hoger zijn dan 0.35%.

*B. – Via een van de luidsprekerconnectors het Service-cassettedeel met het apparaat verbinden.
– Zet het apparaat in de weergeefstand met de 50 Hz cassette uit het Service-cassettedeel.
– Met R aan de achterzijde van de motor op minimale variatie van de indicatoraflezing instellen.

*C. – Als de nauwkeurigheidseisen minder streng zijn, kan als alternatief een ferro-cassette (normal) van hoge kwaliteit gebruikt worden.

*D. – Als de instelling juist is, zal de frekwentiekromme gelijk zijn aan kromme b in Fig. 12 (vervorming ≤ 5%).

## (D) Elektrische Messungen und Einstellungen "Recorder"

*A. – Die höchstzulässige Geschwindigkeitsabweichung beträgt ±0.5%.
Auch lässt sich bei dieser Messung der Jaulwert ablesen.
– Dieser Wert darf 0.35% nicht überschreiten.

*B. – Über einen der Lautsprecherkonnektoren den Service-Cassettenteil mit dem Gerät verbinden.
– Mit dem 50-Hz-Cassette aus dem Service-Cassettenteil das Gerät in die Wiedergabestellung bringen.
– Mit R auf der Rückseite des Motors auf mindest-Schwankungen der Anzeigerablesung einstellen.

*C. – Wenn die Genauigkeitsanforderungen weniger streng sind, kann als Alternative eine Hochleistungs-ferrocassette (Normal) benutzt werden.

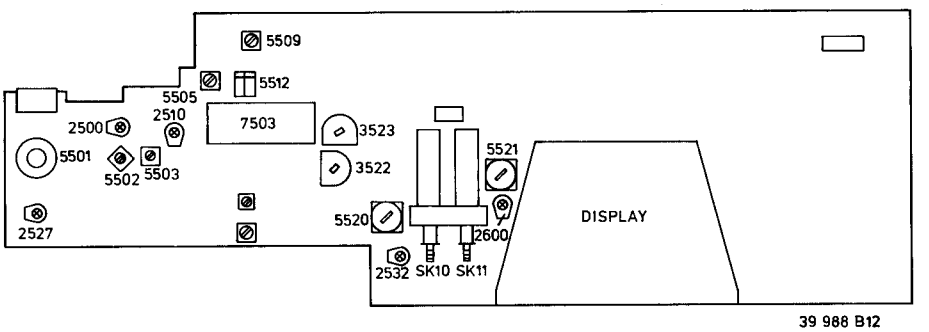
*D. – Wenn die Einstellung richtig ist, wird der Frequenzgang gleich der Kurve b in Bild 12 (Verzerrung ≤ 5%) sein.

*C. – Se le esigeuze de precisione sone meno alte può essere una cassetta du alta qualità al ferro (normale).

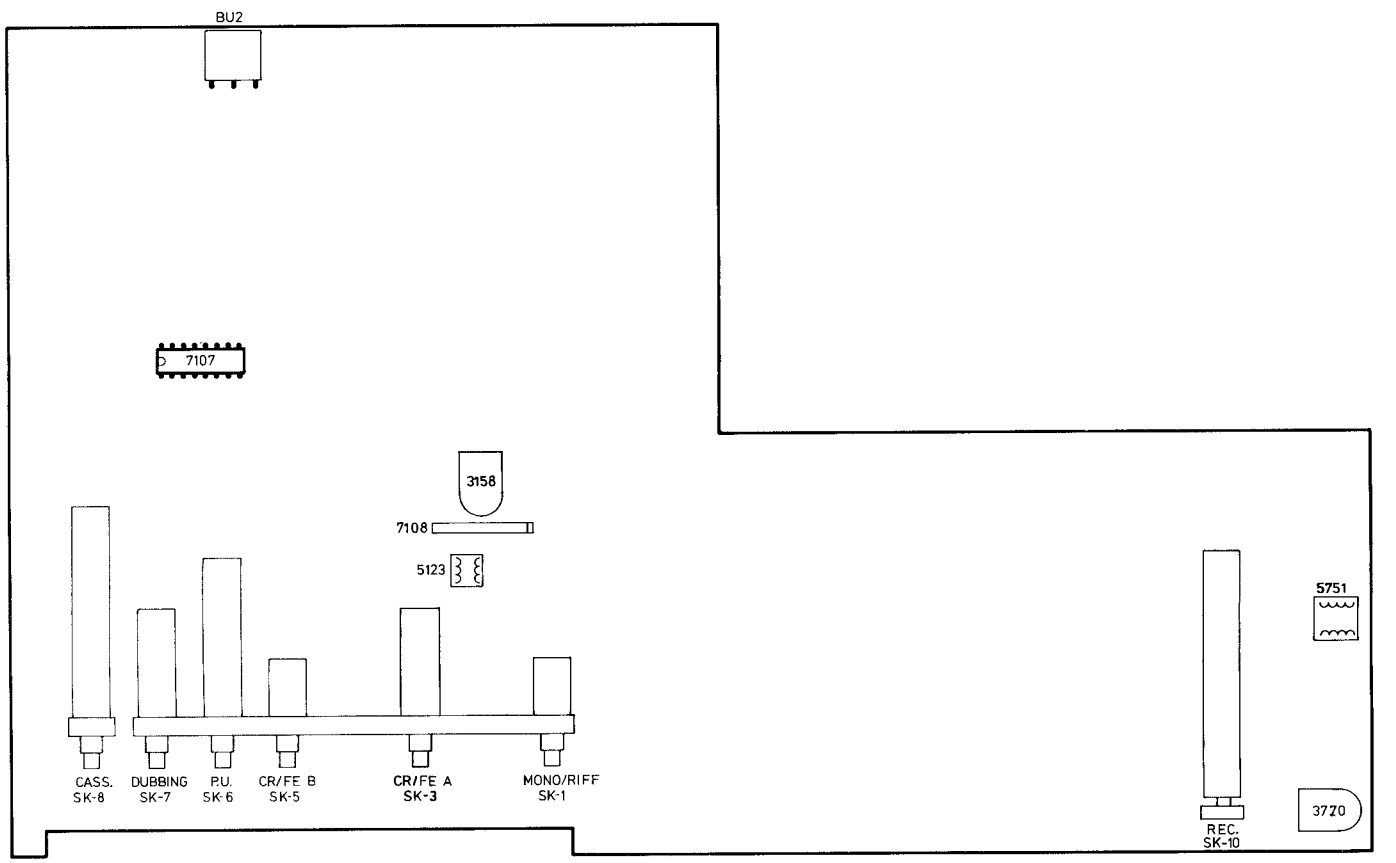
*D. – Se la regolazione è corretta la curva di risposta in frequenza sarà simile alla curva b in Fig. 12 (distorisone ≤ 5%).

**Achtung**

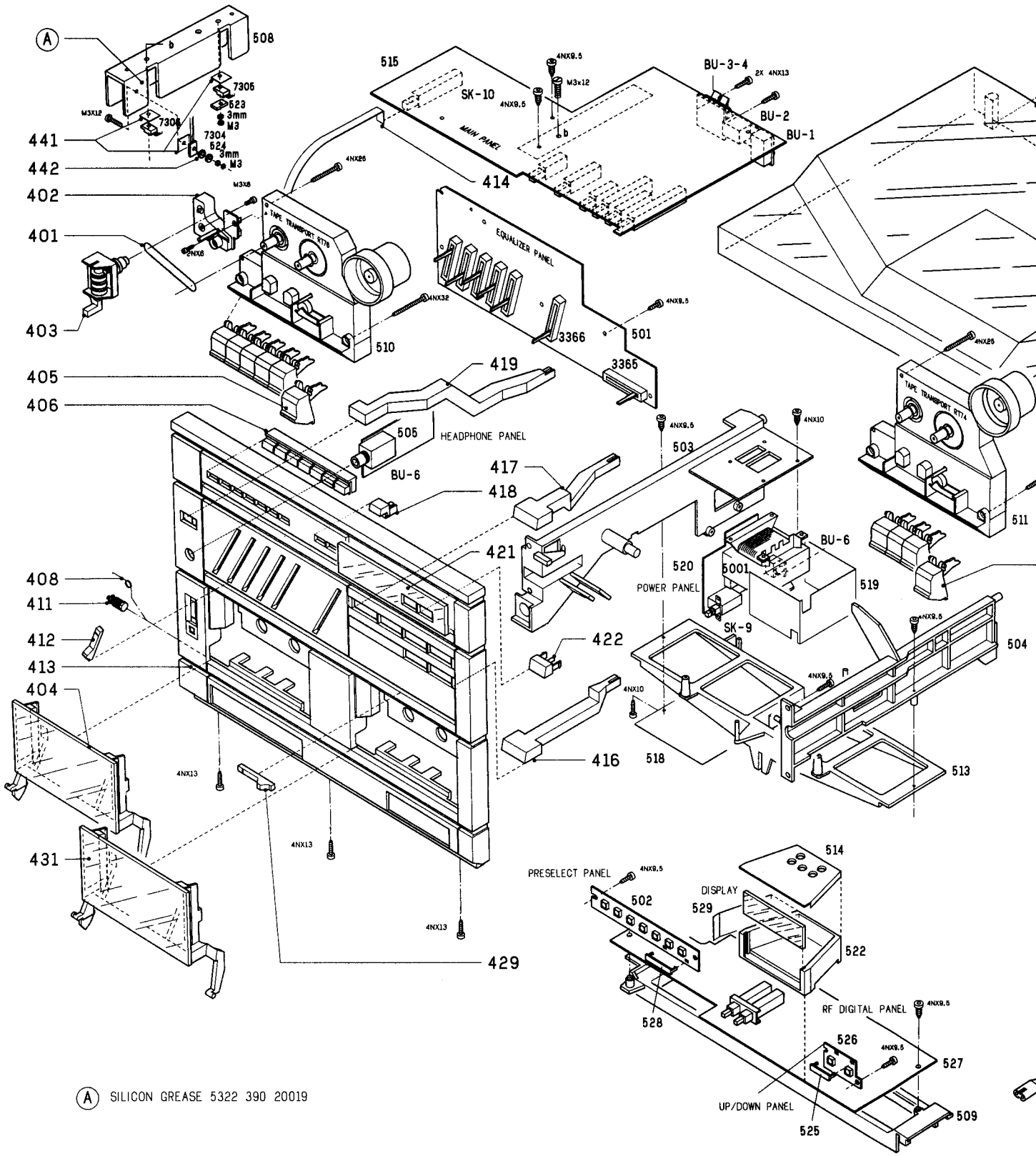
**"Bei notwendigem Abgleich ist das Gerät auf die gesetzlich vorgeschriebenen Eckfrequenzen abzugleichen".**
**>87.2 MHz<108.5 MHz.**



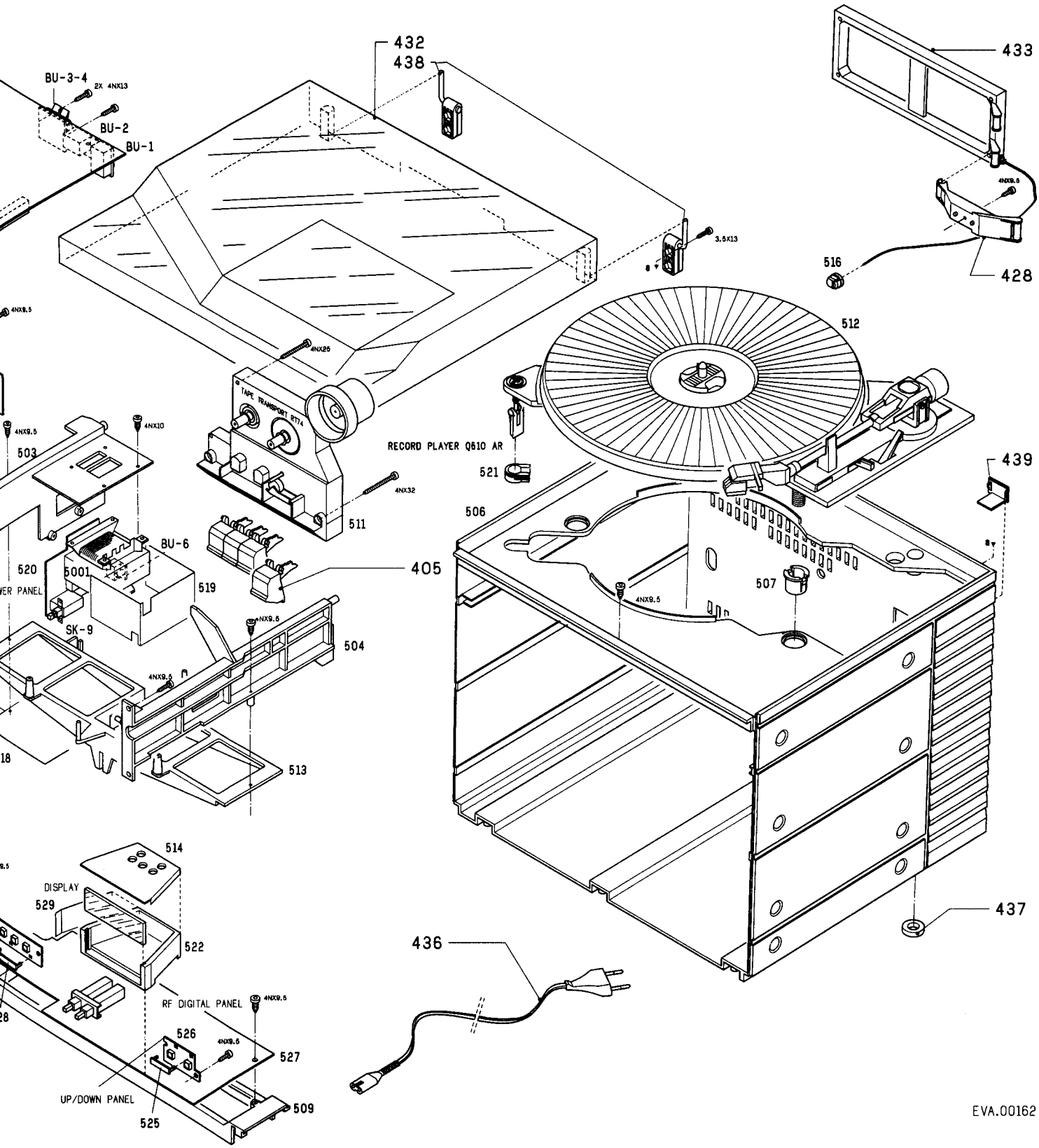

39 988 B12




39 987 C12


A
508
7305
523
3mm
M3
7304
524
441
442
402
401
403
405
406
408
411
412
413
404
431
429
515
SK-10
4NX9.5
M3x12
BU-3-4
2X 4NX13
BU-2
BU-1
MAIN PANEL
414
4NX26
M3X8
2NX6
TAPE TRANSPORT RT78
4NX32
EQUALIZER PANEL
3366
501
3365
510
419
505
HEADPHONE PANEL
BU-6
417
418
421
422
416
503
4NX10
TAPE TRANSPORT RT74
511
BU-6
5001
520
POWER PANEL
519
SK-9
504
518
513
514
PRESELECT PANEL
502
DISPLAY
529
522
528
RF DIGITAL PANEL
526
527
509
UP/DOWN PANEL
525
A SILICON GREASE 5322 390 20019

**F1664 ONLY**


BU-3-4
2X 4NX13
BU-2
BU-1
432
438
433
3.5X13
4NX9.5
516
428
4NX25
TAPE TRANSPORT BTT4
4NX32
511
512
RECORD PLAYER Q610 AR
521
439
4NX10
503
506
BU-6
520
5001
519
405
507
4NX9.5
SK-9
504
513
514
DISPLAY
529
522
437
436
RF DIGITAL PANEL
526
527
UP/DOWN PANEL
525
509
EVA.00162

## ALIGNMENT

### General

- During the alignment, keep the levels of the injected signals as low as possible.
- Alignment of IF stages requires a sweep signal.
  For FM: Apply a 10.7 MHz signal with a sweep of 300 kHz at a frequency of 50 Hz.
  For AM: Apply a 450 kHz (468 kHz) signal with a sweep of 10 kHz at a frequency of 50 Hz.
- Place the peak of the band-pass curve in the middle of the picture by shifting the sweep frequency.

### Equipment required

- RF generator
- Oscilloscope
- DC-millivoltmeter
- AC-milivoltmeter
- Frequency counter

### FM-IF

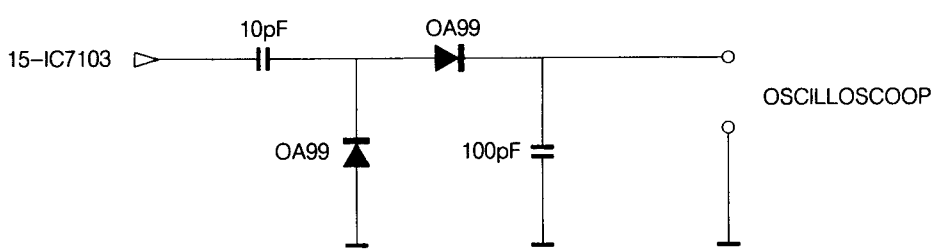
| SK Position | Insert Signal | Tune in | Measure on | Adjust | Meter displays (oscilloscoop) |
|---|---|---|---|---|---|
| SK-10 FM | 10.7 MHz<br>f (sw) = 75 kHz<br>f (m) = 1 kHz<br>to point A | 108 MHz | Testp. 2<br>Testp. 1 | 5505 | 10 V (DC)<br>S-curve<br>symm. |

sw=sweep m=modulated

### FM-RF

| | | | | | |
|---|---|---|---|---|---|
| SK-10 FM | 108 MHz<br>f (sw) = 75 kHz<br>f (m) = 1 kHz<br>to point A | 108 MHz | Testp. 3 | 5504 | Bandpass curve<br>in the middle<br>* |
| | 87.5 MHz<br>f (sw) = 75 kHz<br>f (m) = 1 kHz<br>to point A | 87.5 MHz | Testp. 3<br><br>Testp. 2 | 5501<br>5502<br>5503 | Bandpass curve<br>maximum *<br>(repeat)<br>1.7 V (DC) |
| | 108 MHz<br>f (sw) = 75 kHz<br>f (m) = 1 kHz<br>to point A | 108 MHz | Testp. 3<br><br>Testp. 2 | 2527<br>2509<br>2510 | <br><br><br>10 V |

* Measure bandpass curve with circuit below:




PRS.01511
T22 630

**T.H.D. (total harmonic distorsion)**

| | | | | | |
|---|---|---|---|---|---|
| SK-10 FM | 98 Hz<br>f (sw) = 75 kHz<br>f (m) = 1 kHz<br>to point A | 98 MHz | Testp. 1 | 3522 | S-curve<br>min. THD |

**Stereo-decoder**

| | | | | | |
|---|---|---|---|---|---|
| SK-10 FM | No signal | | Testp. 4 | 3158 | Counter:<br>76 kHz |

**Tuned indication**

| | | | | | |
|---|---|---|---|---|---|
| SK-10 FM | 98 MHz<br>90 % L-R<br>9 % pilot<br>8 µV | 98 MHz | | 3523 | Display:<br>tuned on<br>stereo on |

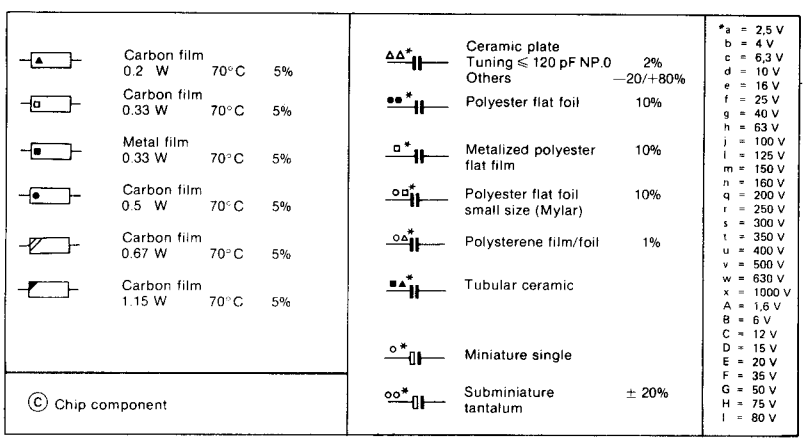
**AM-IF**

| | | | | | |
|---|---|---|---|---|---|
| SK-10 AM<br>SK-11 MW | 450 kHz<br>f (sw) = 10 kHz<br>via 22 nF<br>to point B | Short circuit<br>5511 | Testp. 3 | 5509 | Band pass curve<br>max. symm. |

**AM-RF**

| | | | | | |
|---|---|---|---|---|---|
| SK-10 AM<br>SK-11 MW | To point C:<br>522 kHz<br>f (m) = 1 kHz | 522 kHz<br>(8 V) *<br>overbridge<br>6507<br>with 470 pF | Testp. 3 | 5511 | Bandpass curve<br>in the middle |
| | 567 kHz<br>f (m) = 1 kHz | 567 kHz<br>(1.4 V) | Testp. 3 | 5521 | Bandpass curve<br>maximum (repeat) |
| | 1494 kHz<br>f (m) = 1 kHz | 1494 kHz<br>(6.9 V) | Testp. 3 | 2532 | |
| SK-10 AM<br>SK-11 MW | 155 kHz<br>f (m) = 1 kHz | 155 kHz<br>(1.1 V) | Testp. 3 | 5520 | |
| | 255 kHz<br>f (m) = 1 kHz | 255 kHz<br>(6.2 V) | Testp. 3 | 2600 | |

* Varicap tuning voltages  sw=sweep  m=modulated


Carbon film 0.2 W 70°C 5%
Carbon film 0.33 W 70°C 5%
Metal film 0.33 W 70°C 5%
Carbon film 0.5 W 70°C 5%
Carbon film 0.67 W 70°C 5%
Carbon film 1.15 W 70°C 5%
© Chip component
Ceramic plate Tuning ≤ 120 pF NP.0 2%
Others —20/+80%
Polyester flat foil 10%
Metalized polyester flat film 10%
Polyester flat foil small size (Mylar) 10%
Polysterene film/foil 1%
Tubular ceramic
Miniature single
Subminiature tantalum ± 20%
*a = 2,5 V
b = 4 V
c = 6,3 V
d = 10 V
e = 16 V
f = 25 V
g = 40 V
h = 63 V
j = 100 V
l = 125 V
m = 150 V
n = 160 V
q = 200 V
r = 250 V
s = 300 V
t = 350 V
u = 400 V
v = 500 V
w = 630 V
x = 1000 V
A = 1,6 V
B = 6 V
C = 12 V
D = 15 V
E = 20 V
F = 35 V
G = 50 V
H = 75 V
I = 80 V

27 037A/C

## ELECTRICAL PARTS

| | | |
|---|---|---|
| BAX14 | | 4822 130 34193 |
| BA220 | | 4822 130 34221 |
| BB204B | | 4822 130 34449 |
| BZX79/C4V7 | | 4822 130 34174 |
| BZX79/C5V6 | | 4822 130 34173 |
| BZX79/C7V5 | | 4822 130 30861 |
| BZX79/C8V2 | | 4822 130 34382 |
| BZX79/C16 | | 4822 130 34268 |
| BZX79/C18 | | 4822 130 31024 |
| HZ6C2 | | 4822 130 32698 |
| OA99 | | 4822 130 31482 |
| OF642 varicap | | 4822 130 32159 |
| 1N4148 | | 4822 130 30621 |
| 2KBP02-7001 | | 4822 130 50363 |
| LCA7B8061A (display) | | 4822 130 90348 |

| | | |
|---|---|---|
| 3158 | Trimmer 4k7 lin. | 4822 100 10036 |
| 3325 | Slide potm. 100k | 4822 105 10649 |
| 3326 | Slide potm. 100k | 4822 105 10649 |
| 3327 | Slide potm. 100k | 4822 105 10649 |
| 3328 | Slide potm. 100k | 4822 105 10649 |
| 3329 | Slide potm. 100k | 4822 105 10649 |
| 3365 | Slide potm. 100k | 4822 105 10651 |
| 3366 | Slide potm. 10k | 4822 105 10652 |
| 3383 | 1E NFR25 5% | 4822 116 53074 |
| 3384 | 1E NFR25 5% | 4822 116 53074 |
| 3395 | 4.7E NFR30 5% | 4822 116 52448 |
| 3522 | Trimmer 220E | 4822 100 10019 |
| 3523 | Trimmer 10k lin. | 4822 100 10035 |
| 3770 | Trimmer 100k lin. | 4822 100 10052 |

| | | |
|---|---|---|
| 2SK193LF | | 4822 130 41813 |
| BB204B | | 4822 130 34449 |
| BC549B | | 4822 130 40936 |
| BC817 | | 4822 130 42133 |
| BC848B | (1K marked) | 5322 130 41982 |
| BC849C | | 4822 130 42614 |
| BC858B | (3K marked) | 5322 130 41983 |
| BC858C | (31 marked) | 4822 130 42513 |
| BD135 | | 4822 130 40823 |
| BD675 | | 5322 130 44786 |
| BF199 | | 4822 130 44154 |
| BF245A | | 5322 130 44499 |
| BF245B | | 4822 130 41024 |
| BF494B | | 4822 130 41376 |

| | | |
|---|---|---|
| CXA1030P | | 4822 209 70243 |
| NJM4558DD | | 4822 209 81054 |
| TA7343P | | 4822 209 81245 |
| TDA2030HL | | 4822 209 80674 |
| UPC1238H | | 4822 209 81964 |
| UPD1713AG | | 4822 209 70244 |

| | | |
|---|---|---|
| 2109 | 27 pF 50 V N220 5% | 4822 122 32564 |
| 2158 | 27 pF ceramic N220 | 4822 122 32706 |
| 2173 | 1 nF PS cap. 630 V 1% | 4822 121 50591 |
| 2380 | Elco 3300 µF 40 V 20% | 4822 124 21744 |
| 2386 | Elco 2200 µF 16 V 20% | 4822 124 40723 |
| 2509 | Trimmer 10 pF N450 | 4822 125 60101 |
| 2510 | Trimmer 10 pF N450 | 4822 125 60101 |
| 2513 | 10 pF ceramic 2% | 4822 122 32185 |
| 2527 | Trimmer 10 pF N450 | 4822 125 60101 |
| 2532 | Trimmer 30 pF N750 | 4822 125 60102 |
| 2534 | 510 pF PS. cap. 630 V 1% | 5322 121 54055 |
| 2535 | 27 pF cer. N1500 2% | 4822 122 32848 |
| 2600 | Trimmer 30 pF N750 | 4822 125 60102 |
| 2601 | 270 pF PS. cap 630 V 1% | 5322 121 54047 |
| 2612 | 470 pF PS. cap 630 V 1% | 5322 121 54078 |
| 2613 | Elco super 47 mF 5.5 V | 4822 124 21696 |



| | | |
|---|---|---|
| 5001 | Transformer mains F1664 | 4822 146 21053 |
| 5001 | Transformer mains F1667 | 4822 145 60088 |
| 5123 | | 4822 157 51842 |
| 5501 | Aerial coil | 4822 157 51465 |
| 5502 | RF coil | 4822 157 51065 |
| 5503 | RF coil | 4822 156 21339 |
| 5504 | RF coil | 4822 156 21339 |
| 5505 | FM 10.7 MHz | 4822 153 50102 |
| 5506 | Cer. filter pack. | 4822 242 71558 |
| 5509 | AM IF coil | 4822 158 60511 |
| 5511 | AM osc. coil | 4822 157 51844 |
| 5512 | Ceramic resonator | 4822 142 70484 |
| 5515 | Choke | 4822 157 50964 |
| 5520 | LW aerial coil | 4822 156 10922 |
| 5521 | MW aerial coil | 4822 158 60507 |
| 5522 | Crystal 4.5 MHz | 4822 242 71506 |
| 5530 | Absorb. coil | 4822 156 10641 |
| 5751 | Osc. coil 100 kHz | 4822 156 20946 |

### Miscellaneous

| | | |
|---|---|---|
| BU-1 | | 4822 267 30631 |
| BU-2 | | 4822 267 20153 |
| BU-3/4 | | 4822 290 80609 |
| BU-5 | | 4822 267 30558 |
| BU-6 | | 4822 265 20262 |
| 1301 | 2.5A (T) | 4822 253 10082 |
| 1302 | 1A (T) | 4822 253 10052 |
| 1303 | 1A (T) | 4822 253 10052 |
| 1502 | 315 mA (T) | 4822 253 10074 |
| SK 1-7 | Select sw. assy | 4822 276 50338 |
| SK 8 | Cass. sw. | 4822 276 40346 |
| SK 9 | Power sw. | 4822 276 11567 |
| SK 10 | Record sw. | 4822 277 60232 |
| SK 9-10 | AM/FM sw. assy | 4822 276 20423 |
| SK P | Print sw. frontp. | 4822 276 11896 |
| | Thermal fuse (mains transf) | 4822 252 20146 |
| 1101 | Lamp 12 V/ 110 mA | 4822 134 40634 |
| 1102 | Lamp 12 V/ 110 mA | 4822 134 40634 |

## © Chips 50 V NP0 S1206

| | | |
|---|---|---|
| 1 pF | 5% | 4822 122 32479 |
| 1,5 pF | 5% | 4822 122 31792 |
| 1,8 pF | 5% | 4822 122 32087 |
| 2,2 pF | 5% | 4822 122 32425 |
| 3,3 pF | 5% | 4822 122 32079 |
| 3,9 pF | 5% | 4822 122 32081 |
| 4,7 pF | 5% | 4822 122 32082 |
| 5,6 pF | 5% | 4822 122 32506 |
| 6,8 pF | 5% | 4822 122 32507 |
| 8,2 pF | 5% | 4822 122 32083 |
| 10 pF | 5% | 4822 122 31971 |
| 12 pF | 5% | 4822 122 32139 |
| 15 pF | 5% | 4822 122 32504 |
| 18 pF | 5% | 4822 122 31769 |
| 22 pF | 10% | 4822 122 31837 |
| 27 pF | 5% | 4822 122 31966 |
| 33 pF | 5% | 4822 122 31756 |
| 39 pF | 5% | 4822 122 31972 |
| 47 pF | 5% | 4822 122 31772 |
| 56 pF | 5% | 4822 122 31774 |
| 68 pF | 5% | 4822 122 31961 |
| 82 pF | 10% | 4822 122 31839 |
| 100 pF | 5% | 4822 122 31765 |
| 120 pF | 5% | 4822 122 31766 |
| 150 pF | 5% | 4822 122 31767 |
| 180 pF | 2% | 4822 122 31794 |
| 220 pF | 5% | 4822 122 31965 |
| 270 pF | 5% | 4822 122 32142 |
| 330 pF | 10% | 4822 122 31642 |
| 390 pF | 5% | 4822 122 31771 |
| 470 pF | 5% | 4822 122 31727 |
| 560 pF | 5% | 4822 122 31773 |
| 680 pF | 5% | 4822 122 31775 |
| 820 pF | 5% | 4822 122 31974 |
| 1 nF | 10% | 5322 122 31647 |
| 1,2 nF | 5% | 4822 122 31807 |
| 1,5 nF | 10% | 4822 122 31781 |
| 1,8 nF | 10% | 4822 122 32153 |
| 2,2 nF | 10% | 4822 122 31644 |
| 2,7 nF | 10% | 4822 122 31783 |
| 3,3 nF | 10% | 4822 122 31969 |
| 3,9 nF | 10% | 4822 122 32566 |
| 4,7 nF | 10% | 4822 122 31784 |
| 5,6 nF | 10% | 4822 122 31916 |
| 6,8 nF | 10% | 4822 122 31976 |
| 10 nF | 10% | 4822 122 31728 |
| 12 nF | 10% | 5322 122 31648 |
| 15 nF | 10% | 4822 122 31782 |
| 18 nF | 10% | 4822 122 31759 |
| 22 nF | 10% | 4822 122 31797 |
| 27 nF | 10% | 4822 122 32541 |
| 33 nF | 10% | 4822 122 31981 |
| 47 nF | 10% | 4822 122 32542 |
| 56 nF | 10% | 4822 122 32183 |
| 100 nF | 10% | 4822 122 31947 |
| 180 nF | 10% | 4822 122 32915 |

## © Chips 0,125 W S1206 NP0

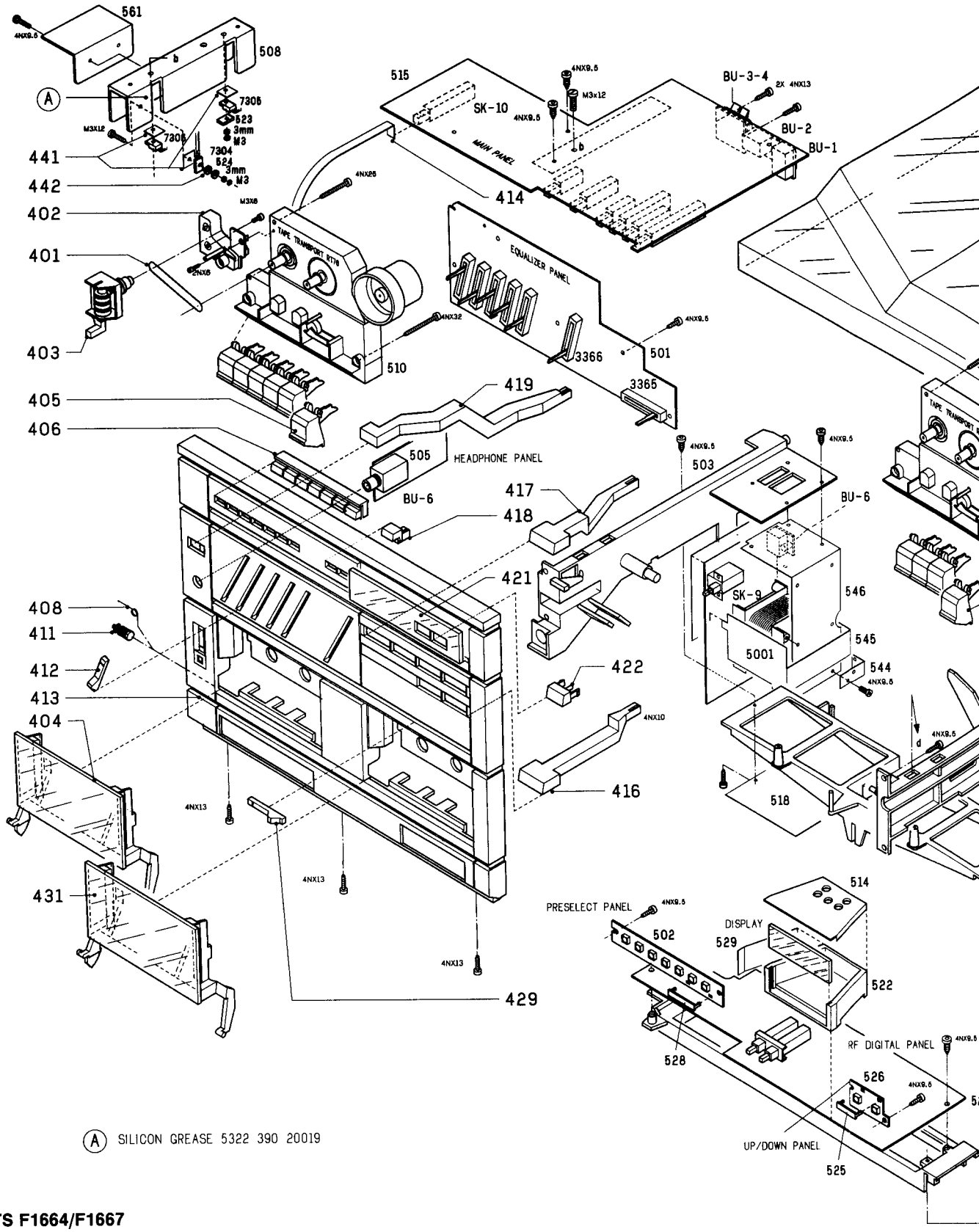
| | | |
|---|---|---|
| 0 E | jumper | 4822 111 90163 |
| 1 E | 5% | 4822 111 90184 |
| 1,1 E | 5% | 4822 111 90377 |
| 1,2 E | 5% | 4822 111 90378 |
| 1,3 E | 5% | 4822 111 90379 |
| 1,5 E | 5% | 4822 111 90381 |
| 1,6 E | 5% | 4822 111 90382 |
| 1,8 E | 5% | 4822 111 90383 |
| 2 E | 5% | 4822 111 90384 |
| 2,2 E | 5% | 5322 111 90104 |
| 2,4 E | 5% | 4822 111 90385 |
| 2,7 E | 5% | 4822 111 90386 |
| 3 E | 5% | 4822 111 90387 |
| 3,3 E | 5% | 4822 111 90388 |
| 3,6 E | 5% | 4822 111 90389 |
| 3,9 E | 5% | 4822 111 90391 |
| 4,3 E | 5% | 4822 111 90392 |

## © Chips 0,125 W S1206

| | | |
|---|---|---|
| 4,7 E | 5% | 5322 111 90376 |
| 5,1 E | 5% | 4822 111 90393 |
| 5,6 E | 5% | 4822 111 90394 |
| 6,2 E | 5% | 4822 111 90395 |
| 6,8 E | 5% | 4822 111 90254 |
| 7,5 E | 5% | 4822 111 90396 |
| 8,2 E | 5% | 4822 111 90397 |
| 9,1 E | 5% | 4822 111 90398 |
| 10 E | 2% | 5322 111 90095 |
| 11 E | 2% | 4822 111 90338 |
| 12 E | 2% | 4822 111 90341 |
| 13 E | 2% | 4822 111 90343 |
| 15 E | 2% | 4822 111 90344 |
| 16 E | 2% | 4822 111 90347 |
| 18 E | 2% | 5322 111 90139 |
| 20 E | 2% | 4822 111 90352 |
| 22 E | 2% | 4822 111 90186 |
| 24 E | 2% | 4822 111 90355 |
| 27 E | 2% | 5322 111 90105 |
| 30 E | 2% | 4822 111 90356 |
| 33 E | 2% | 4822 111 90357 |
| 36 E | 2% | 4822 111 90359 |
| 39 E | 2% | 4822 111 90361 |
| 43 E | 2% | 5322 116 90125 |
| 47 E | 2% | 4822 111 90217 |
| 51 E | 2% | 4822 111 90365 |
| 56 E | 2% | 4822 111 90239 |
| 62 E | 2% | 4822 111 90367 |
| 68 E | 2% | 4822 111 90203 |
| 75 E | 2% | 4822 111 90371 |
| 82 E | 2% | 4822 111 90124 |
| 91 E | 2% | 4822 111 90375 |
| 100 E | 2% | 5322 111 90091 |
| 110 E | 2% | 4822 111 90335 |
| 120 E | 2% | 4822 111 90339 |
| 130 E | 2% | 4822 111 90164 |
| 150 E | 2% | 5322 111 90098 |
| 160 E | 2% | 4822 111 90345 |
| 180 E | 2% | 5322 111 90242 |
| 200 E | 2% | 4822 111 90348 |
| 220 E | 2% | 4822 111 90178 |
| 240 E | 2% | 4822 111 90353 |
| 270 E | 2% | 4822 111 90154 |
| 300 E | 2% | 4822 111 90156 |
| 330 E | 2% | 5322 111 90106 |
| 360 E | 1% | 4822 111 90288 |
| 360 E | 2% | 4822 111 90358 |
| 390 E | 2% | 5322 111 90138 |
| 430 E | 2% | 4822 111 90362 |
| 470 E | 2% | 5322 111 90109 |
| 510 E | 2% | 4822 111 90245 |
| 560 E | 2% | 5322 111 90113 |
| 620 E | 2% | 4822 111 90366 |
| 680 E | 2% | 4822 111 90162 |
| 750 E | 2% | 5322 111 90306 |
| 820 E | 2% | 4822 111 90171 |
| 910 E | 2% | 4822 111 90372 |
| 1 k | 2% | 5322 111 90092 |
| 1,1 k | 2% | 4822 111 90336 |
| 1,2 k | 2% | 5322 111 90096 |
| 1,3 k | 2% | 4822 111 90244 |
| 1,5 k | 2% | 4822 111 90151 |
| 1,6 k | 2% | 5322 111 90265 |
| 1,8 k | 2% | 5322 111 90101 |
| 2 k | 2% | 4822 111 90165 |
| 2,2 k | 2% | 4822 111 90248 |
| 2,4 k | 2% | 4822 111 90289 |
| 2,7 k | 2% | 4822 111 90569 |
| 3 k | 2% | 4822 111 90198 |
| 3,3 k | 2% | 4822 111 90157 |
| 3,6 k | 2% | 5322 111 90107 |
| 3,9 k | 2% | 4822 111 90571 |
| 4,3 k | 2% | 4822 111 90167 |
| 4,7 k | 2% | 5322 111 90111 |
| 5,1 k | 2% | 5322 111 90268 |
| 5,6 k | 2% | 4822 111 90572 |
| 6,2 k | 2% | 4822 111 90545 |

## © Chips 0,125 W S1206

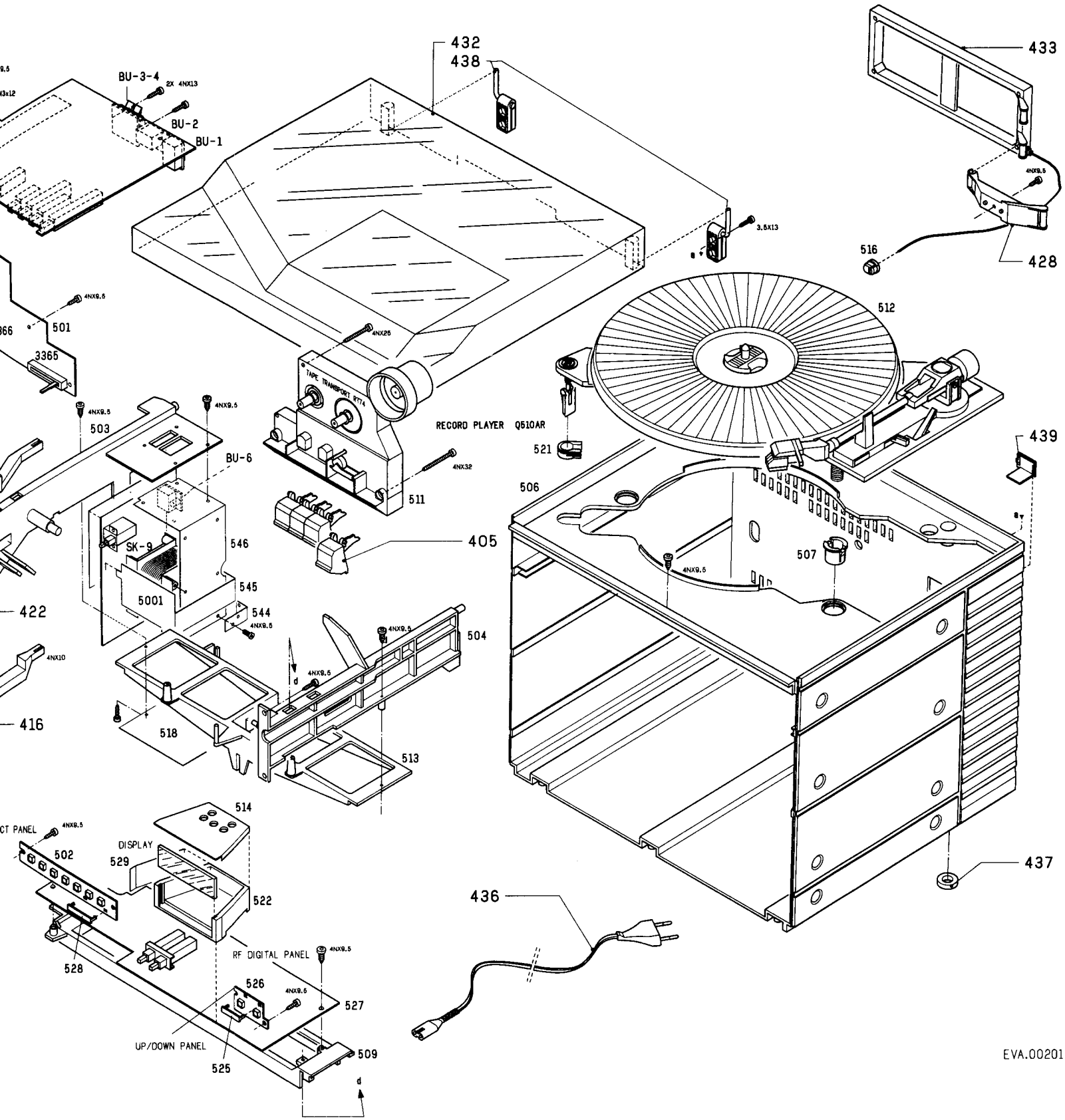
| | | |
|---|---|---|
| 6,8 k | 2% | 4822 111 90544 |
| 7,5 k | 2% | 4822 111 90276 |
| 8,2 k | 2% | 5322 111 90118 |
| 9,1 k | 2% | 4822 111 90373 |
| 10 k | 2% | 4822 111 90249 |
| 11 k | 2% | 4822 111 90337 |
| 12 k | 2% | 4822 111 90253 |
| 13 k | 2% | 4822 111 90509 |
| 15 k | 2% | 4822 111 90196 |
| 16 k | 2% | 4822 111 90346 |
| 18 k | 2% | 4822 111 90238 |
| 20 k | 2% | 4822 111 90349 |
| 22 k | 2% | 4822 111 90251 |
| 24 k | 2% | 4822 111 90512 |
| 27 k | 2% | 4822 111 90542 |
| 30 k | 2% | 4822 111 90216 |
| 33 k | 2% | 5322 111 90267 |
| 36 k | 2% | 4822 111 90514 |
| 39 k | 2% | 5322 111 90108 |
| 43 k | 2% | 4822 111 90363 |
| 47 k | 2% | 4822 111 90543 |
| 51 k | 2% | 5322 111 90274 |
| 56 k | 2% | 4822 111 90573 |
| 62 k | 2% | 5322 111 90275 |
| 68 k | 2% | 4822 111 90202 |
| 75 k | 2% | 4822 111 90574 |
| 82 k | 2% | 4822 111 90575 |
| 91 k | 2% | 5322 111 90277 |
| 100 k | 2% | 4822 111 90214 |
| 110 k | 2% | 5322 111 90269 |
| 120 k | 2% | 4822 111 90568 |
| 130 k | 2% | 4822 111 90511 |
| 150 k | 2% | 5322 111 90099 |
| 160 k | 2% | 5322 111 90264 |
| 180 k | 2% | 4822 111 90565 |
| 200 k | 2% | 4822 111 90351 |
| 220 k | 2% | 4822 111 90197 |
| 240 k | 2% | 4822 111 90215 |
| 270 k | 2% | 4822 111 90302 |
| 300 k | 2% | 5322 111 90266 |
| 330 k | 2% | 4822 111 90513 |
| 360 k | 2% | 4822 111 90515 |
| 390 k | 2% | 4822 111 90182 |
| 430 k | 2% | 4822 111 90168 |
| 470 k | 2% | 4822 111 90161 |
| 510 k | 2% | 4822 111 90364 |
| 560 k | 2% | 4822 111 90169 |
| 620 k | 2% | 4822 111 90213 |
| 680 k | 2% | 4822 111 90368 |
| 750 k | 2% | 4822 111 90369 |
| 820 k | 2% | 4822 111 90205 |
| 910 k | 2% | 4822 111 90374 |
| 1 M | 2% | 4822 111 90252 |
| 1,1 M | 5% | 4822 111 90408 |
| 1,2 M | 5% | 4822 111 90409 |
| 1,3 M | 5% | 4822 111 90411 |
| 1,5 M | 5% | 4822 111 90412 |
| 1,6 M | 5% | 4822 111 90413 |
| 1,8 M | 5% | 4822 111 90414 |
| 2 M | 5% | 4822 111 90415 |
| 2,2 M | 5% | 4822 111 90185 |
| 2,4 M | 5% | 4822 111 90416 |
| 2,7 M | 5% | 4822 111 90417 |
| 3 M | 5% | 4822 111 90418 |
| 3,3 M | 5% | 4822 111 90191 |
| 3,6 M | 5% | 4822 111 90419 |
| 3,9 M | 5% | 4822 111 90421 |
| 4,3 M | 5% | 4822 111 90422 |
| 4,7 M | 5% | 4822 111 90423 |
| 5,1 M | 5% | 4822 111 90424 |
| 5,6 M | 5% | 4822 111 90425 |
| 6,2 M | 5% | 4822 111 90426 |
| 6,8 M | 5% | 4822 111 90235 |
| 7,5 M | 5% | 4822 111 90427 |
| 8,2 M | 5% | 4822 111 90237 |
| 9,1 M | 5% | 4822 111 90428 |
| 10M | 5% | 5322 111 91141 |




**MECHANICAL PARTS F1664/F1667**

| | | | | | |
|---|---|---|---|---|---|
| 401 | 4822 358 10087 | 413 | 4822 426 51074 (F1667) | 431 | 4822 426 60428 |
| 402 | 4822 256 90798 | 414 | 4822 492 90088 | 432 | 4822 426 60327 |
| 403 | 4822 349 50209 | 416 | 4822 410 25259 | 433 | 4822 303 40048 |
| 404 | 4822 426 60426 | 417 | 4822 410 30442 | 436 | 4822 321 10244 |
| 405 | 4822 411 61202 | 418 | 4822 410 25079 | 437 | 4822 462 40683 |
| 406 | 4822 410 25078 | 419 | 4822 410 30442 | 438 | 4822 417 10631 |
| 408 | 4822 492 41091 | 421 | 4822 450 60725 | 439 | 4822 460 10589 |
| 411 | 4822 535 70528 | 422 | 4822 410 25081 | 441 | 4822 255 40161 |
| 412 | 4822 411 61203 | 428 | 4822 404 20503 | 442 | 4822 532 51476 |
| 413 | 4822 426 51036 (F1664) | 429 | 4822 411 61137 | | |

**F1667 ONLY**




0428
0327
0048
0244
0683
0631
0589
0161
1476

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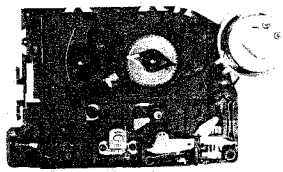

# Service Manual

(GB)

The RT-76 mechanism is mechanically identical to the RT-1 mechanism WT07 (see supplement I-RT-1), however the motor is now screwed into the motor holder.
Moreover the possibility of Pause has been added.
For the construction see Fig. 1.
Under the erase head K2 a plate, service code number 4822 466 91402, has been added.

(F)

Du point de vue mécanique, le mécanique RT-76 est similaire au RT-1 WT07 (voir en supplement I-RT-1), à la différence que le moteur est à présent vissé sur le support.
En outre, la possibilité d'un arrêt instantané a été ajoutée.
Voir en Fig. 1 pour ce qui est de la construction.
Une plaquette a été ajoutée sous la tête d'effacement K2-code: 4822 466 91402.

(I)

Dal punto di vista meccanica, il meccanismo RT-76 è simile al RT-1 WT07 (supplement I-RT-1), eccetto il fatto che il motore viene ora vitato sul sostegno.
Inoltre, la possibilità di pauza è stata creata.
Vedi in Fig. 1 per quanto è della costruzione.
Una piastrina è stata aggiunta sotto la testina di cancellazione K2 - numero di codice:
4822 466 91402.

| | | | |
|---|---|---|---|
| 60 | 4822 276 11097 | K1 | 4822 249 10186 |
| 73 | 4822 356 20175 | K2 | 4822 249 40093 |
| 75 | 4822 403 51905 | M1 | 4822 361 20394 |
| 80 | 4822 403 51906 | | |
| 100 | 4822 502 11434 | | |
| 105 | 4822 459 80253 | | |

(NL)

Het RT-76 loopwerk is mechanisch gelijk aan het RT-1 loopwerk WT07 (zie supplement I-RT-1), met dat verschil dat de motor nu op de motorhouder geschroefd is.
Bovendien is een pauze mogelijkheid toegevoegd.
Voor constructie zie Fig. 1.
Onder de wiskop (K2) is een plaatje toegevoegd, service codenummer 4822 466 91402.

(D)

Der RT-76 Mechanismus ist dem RT-1 Mechanismus WT07 (siehe Supplement I-RT-1) gleich, jedoch der Motor ist jetzt auf dem Motorhalter geschraubt.
Ausserdem ist eine Pausemöglichkeit hinzugefügt worden.
Für die Konstruktion siehe Fig. 1.
Unter dem Löschkopf K2 ist eine Platte, Kodenummer 4822 466 91402 hinzugefügt worden.

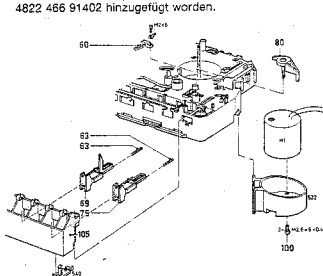


Fig. 1



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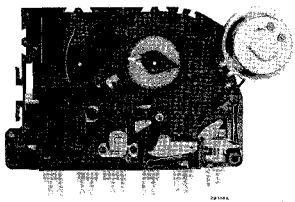

# Service Manual

(GB)

The RT-74 mechanism is mechanically identical to the RT-1 mechanism WT07 (see supplement I-RT-1), however the motor is now screwed into the motor holder and item 64 + 63, 505 and 506 have been deleted. Under the erase head K2 a plate, service code number 4822 466 91402, has been added.
For the construction see Fig. 1.

(F)

Du point de vue mécanique, le mécanique RT-74 est similaire au RT-1 WT07 (voir en supplement I-RT-1), à la différence que le moteur est à présent vissé sur le support et les repères 64 + 63, 505 et 506 sont supprimes.
Une plaquette a été ajoutée sous la tête d'effacement K2-code: 4822 466 91402.
Voir en Fig. 1 pour ce qui est de la construction.

(I)

Dal punto di vista meccanica, il meccanismo RT-74 è simile al RT-1 WT07 (supplement I-RT-1), eccetto il fatto che il motore viene ora vitato sul sostegno e le posizione 64 + 63, 505 e 506 sono soppressi.
Una piastrina è stata aggiunta sotto la testina di cancellazione K2 - numero di codice:
4822 466 91402.
Vedi in Fig. 1 per quanto è della costruzione.

| | | | |
|---|---|---|---|
| 60 | 4822 276 11097 | K1 | 4822 249 10195 |
| 100 | 4822 502 11434 | K2 | 4822 249 40093 |
| 105 | 4822 459 80253 | M1 | 4822 361 20394 |

(NL)

Het RT-74 loopwerk is mechanisch gelijk aan het RT-1 loopwerk WT07 (zie supplement I-RT-1), met dat verschil dat de motor nu op de motorhouder geschroefd is en posities 64 + 63, 505 en 506 vervallen zijn.
Onder de wiskop (K2) is een plaatje toegevoegd, service codenummer 4822 466 91402.
Voor constructie zie Fig. 1.

(D)

Der RT-74 Mechanismus ist dem RT-1 Mechanismus WT07 (siehe Supplement I-RT-1) gleich, jedoch der Motor ist jetzt auf dem Motorhalter geschraubt und Positionen 64 + 63, 505 und 506 sind abgeführt.
Unter dem Löschkopf K2 ist eine Platte, Kodenummer 4822 466 91402 hinzugefügt worden.
Für die Konstruktion siehe Fig. 1.

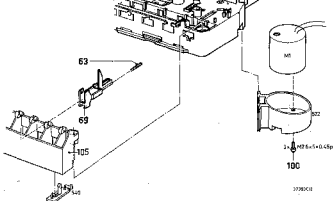


Fig. 1



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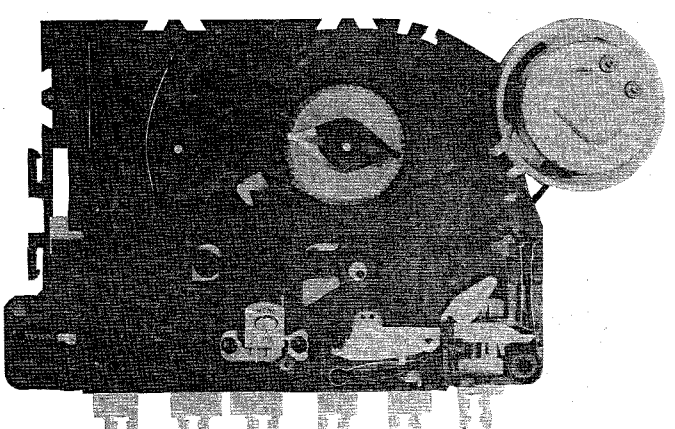

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DocumentationTechnique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Servicio

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(GB)

**TAPE TRANSPORT - FIG. 1**

— **Removal of pressure roller 53**

Remove spring 52 and push locking lug aside.

— **Removal of head support bracket 58**

Remove pressure roller 53.
Push the lugs in the guide of item 58 inwards, pull the bracket slightly rearwards and then lift it up at the rear.

— **Removal of push-buttons 64, 66, 67, 68, 69**

Remove pressure roller 53.
Remove head support bracket 58.
Remove locking bracket 59 (mind spring 61).
The push-button is released by pressing the locking lug of the related push-button slightly inwards; the push-button may now be lifted out of the chassis.
Be attentive to item 63.

— **Removal of switch contact springs 94, 96**

These two springs are attached to the chassis by means of a snap-in construction (see bottom side of chassis).

**ADJUSTMENTS AND CHECKS**

**Height of record/playback K1 Fig. 1**

— Switch the power supply off.
— Slide adjusting jig 4822 402 60245 over the capstan while pulling pressure roller 53 slightly back.
— The jig must be advanced on the capstan until it is in line with the erase head guides.
— The R/P head should now be adjusted so that the jig slides exactly between the tape guides of the two heads.

**Check of pressure roller pressure, Fig. 2**

The pressure that the pressure roller 53 exerts on the capstan should be 220 ± 50 grams.
To measure this pressure, proceed as follows:
Insert an arbitrary cassette and select the Play mode.
Push the pressure roller back at the point indicated in Fig. 2 (point F), using a spring pressure gauge 4822 395 80028.
At the moment that the pressure roller disengages, tape transport stops; at this precise moment the scale should be read.
No pressure adjustment has been provided.
In the event of a wrong pressure, replace spring 52.

**Take-up clutch 83**

The torque can be measured with the friction measurement cassette 4822 395 30054 in the Play mode.
The play take-up torque should be 45 gcm; permissible fluctuation in between these values: 5 gcm.
Supplying reel drag should be between 2 and 8 gcm.
The torque is determined by the sloping-up sides and the flat springs. Figs. 1 (A and B).
The torque is adjustable by hooking the flat spring behind another stud.

**Check of tape travel and capstan adjustment**

Insert a mirror cassette (4822 395 30058) and select Play mode.
When the tape rides up and down at the capstan, the perpendicularity of the capstan need be corrected with flywheel thrust bearing 74. Refer to Fig. 1.
The tape should travel straight and smoothly between the tape guides and past the capstan.

Minor deviations in this pattern are permissible since their effect is negligible with a normal cassette.

**For adjustment of R/P head azimuth and tape speed refer to the Manual belonging to this apparatus.**

(NL)

**LOOPWERK FIG. 1**

— **Verwijderen van de drukrol 53**

Verwijder veer 52 en druk de borglip opzij.

— **Verwijderen van de kop drager beugel 58**

Verwijder de drukrol 53.
Druk de lippen in de geleiding van pos 58 naar binnen, trek de beugel iets naar achteren en trek hem vervolgens aan de achterzijde omhoog.

— **Verwijderen van de toetsen 64, 66, 67, 68, 69**

Verwijder de drukrol 53.
Verwijder de kopdrager beugel 58.
Verwijder de vergrendel beugel 59 (let op veer 61).
Door de borglip van de desbetreffende toets iets naar binnen te drukken komt de toets vrij en kan deze uit het chassis geschoven worden, let daarbij op pos 63.

— **Verwijderen van schakelcontact veren 94, 96**

Deze 2 veren zijn in het chassis bevestigd d.m.v. een in klik bevestiging (zie onderzijde van het chassis).

**INSTELLINGEN EN CONTROLES**

**Kophoogte O/W kop K1 Fig. 1**

— Schakel de voedingsspanning van het apparaat uit.
— Schuif de instelmal 4822 402 60245 over de toonas, terwijl de drukrol 53 iets terug getrokken wordt.
— De mal moet zover over de toonas geschoven worden, dat deze zich in het verlengde van de wiskop bandgeleiders bevindt.
— De O/W kop moet nu zodanig ingesteld worden dat de mal precies tussen de bandgeleiders van de beide koppen schuift.

**Kontrole van de drukrol kracht Fig. 2**

De kracht van de drukrol 53 tegen de toonas moet 220 gram ± 50 gram zijn.
Dit kan als volgt gemeten worden:
Apparaat in stand weergave met een willekeurige cassette.
Druk de drukrol met een veer drukmeter (4822 395 80028) in het aangegeven punt terug; Fig. 2 punt F.
Op het moment dat de drukrol loskomt dan stopt het band transport; op dit moment moet de meter afgelezen worden.
Deze druk kan niet worden ingesteld.
Indien de veerdruk niet goed is, veer 52 vervangen.

**Opspoelfrictie 83**

De frictie kracht kan gemeten worden met een frictiemeet cassette (4822 395 30054) in positie „Play".
De meetwaarde moet zijn:
Op spoelzijde 45 g.cm, toegestane variatie binnen deze waarden 5 g.cm.
Afspoelzijde 2-8 g.cm.

De frictiekracht wordt bepaald door de schuin oplopende kanten en bladveren Fig. 1 (A en B).
De kracht is instelbaar door de bladveer een aantal nokken te verplaatsen.

**Kontrole van de bandloop en toonas instelling**

Apparaat in stand play met een spiegelcassette (4822 395 30058).
Wanneer de band bij de toonas naar boven of naar beneden gaat moet de toonas loodrecht worden ingesteld met het vliegwiel taatslager 74, zie Fig. 1.
De band moet recht en gestroomlijnd tussen de bandgeleiders en langs de toonas lopen.
Kleine afwijkingen in dit patroon zijn toelaatbaar omdat dit bij normale cassette geen invloed heeft.

**Voor het instellen van de Azimuth van de O/W kop en de bandsnelheid afregeling: zie de Manual van dit apparaat.**

(F)

**MÉCANISME D'ENTRAÎNEMENT DE LA BANDE - FIGURE 1**

— **Démontage du galet presseur 53**

Enlever le ressort 52 et écarter la languette de blocage en poussant.

— **Démontage de l'étrier porte-têtes 58**

Enlever le galet presseur 53.
Pousser les languettes dans la glissière du rep. 58 vers l'intérieur, tirer l'étrier quelque peu vers l'arrière, puis le soulever par le bout.

— **Démontage des touches 64, 66, 67, 68, 69**

Enlever le galet presseur 53.
Enlever l'étrier porte-têtes 58.
Enlever l'étrier de verrouillage 59 (attention au ressort 61).
En pressant la languette de blocage de la touche concernée quelque peu vers l'entérieur, la touche se libère et pourra être sortie du châssis en glissant.
Attention au rep. 63.

— **Démontage des ressorts de contact 94, 96**

Ces deux ressorts sont fixés au châssis par encliquetage (voir le dessous du châssis).

**REGLAGES ET CONTROLES**

**Hauteur de la tête d'enregistrement/lecture K1-Fig. 1**

— Couper la tension d'alimentation de l'appareil.
— Glisser le gabarit de réglage 4822 402 60245 pardessus le cabestan, tout en écartant le galet presseur 53 sur la distance necessaire.
— Avancer le gabarit sur le cabestan jusqu'à ce qu'il soit dans le prolongement des guide-bande de la tête d'effacement.
— Régler la tête d'enreg./lecture de façon que le gabarit se place exactement entre les guide-bande des deux têtes.

**Contrôle de la force de pression - Fig. 2**

La force que le galet presseur 53 exerce sur le cabestan doit être de 220 g ± 50 g.
Effectuer la mesure comme suit:
Introduire une cassette quelconque et choisir la position "Lecture".
Ecarter le galet presseur du cabestan en appliquant un dynamomètre (4822 395 80028) au point indiqué; Fig. 2 point F.
Au moment où le galet presseur est libre, le mécanisme d'entraînement s'arrête; c'est le moment précis où il faut lire le dynamomètre.
Aucune possibilité de réglage de la force de pression n'a été prévue.
Si la force de pression est incorrecte, il faut remplacer le ressort 52.

**Embrayage à friction 83**

Le couple de friction peut être vérifié à l'aide d'une cassette-test de friction (4822 395 30054), l'appareil étant en position Lecture.
La valeur mesurée doit être:
Côté porte-bobine récepteur: 45 gcm (variation admissible entre ces valeurs: 5 gcm).
Côté porte-bobine débiteur: 2-8 gcm.
Le couple de friction est déterminé par les rampes et les ressorts à lame. Fig. 1 (A et B).
Le couple peut être ajusté en accrochant le ressort à lame à l'un des bossages voisins.

**Contrôle du défilement de la bande et du réglage du cabestan**

Choisir la position Lecture et lire une cassette à miroir (4822 395 30058).
Si la bande a tendance à monter ou à plonger au niveau du cabestan, il faut corriger la position verticale du cabestan au moyen du palier de butée du volant 74. Voir la Fig. 1.
La bande doit défiler souplement et en position verticale entre les guides-bandes et le long du cabestan.
De faibles déviations dans le déroulement sont admissibles, puisque n'yant pas de conséquences pour la lecture de cassettes normales.

**Pour le réglage d'azimut de la tête d'enregistrement/lecture et l'ajustage de la vitesse défilement, se reporter au Manuel de l'appareil concerné.**

(D)

**LAUFWERK, BILD 1**

— **Andruckrolle 53 entfernen**

Feder 52 herausnehmen und die Sperrzunge seitwärts drücken.

— **Kopfträgerbügel 58 entfernen**

Andruckrolle 53 beseitigen.
Die Zungen in der Führung von Pos. 58 einwärtsdrücken, den Bügel ein wenig rückwärts ziehen und ihn dann auf der Rückseite hochziehen.

— **Die Tasten 64, 66, 67, 68 und 69 entfernen**

Andruckrolle 53 abnehmen.
Kopfträgerbügel 58 abnehmen.
Verriegelungsbügel 59 (Feder 61 beachten) entfernen.
Dadurch dass die Sicherungsfahne der entsprechenden Taste ein wenig einwärts gedrückt wird, wird die Taste frei und lässt sie sich aus dem Chassis hinausschieben; es ist dabei Pos. 63 zu beachten.

— **Schaltkontaktfedern 94 und 96 lösen**

Diese 2 Federn sind mittels einer Einschnappbefestigung in dem Chassis befestigt.
Siehe Unterseite des Chassis.

## EINSTELLUNGEN UND KONTROLLEN

**Höhe des A/W-Kopfes K1, Bild 1**

— Die Versorgungsspannung des Geräts ausschalten.
— Die Einstellehre 4822 402 60245 auf die Tonachse schieben, während die Andruckrolle ein wenig zurückgezogen wird.
— Die Lehre ist so weit auf die Tonachse zu schieben, dass sie sich in der Verlängerung der Löschkopfbandführungen befindet.
— Der A/W-Kopf ist dahin einzustellen, dass die Lehre genau zwischen die Bandführungen der beiden Köpfe schiebt.

**Kontrolle des Andruckrollendrucks, Bild 2**

Der druck der Andruckrolle 53 an die Tonachse soll 220 g ± 50 g betragen.
Dieser Druck lässt sich folgendermassen messen:
Gerät mit einer beliebigen Cassette in Wiedergabestellung. Andruckrolle mit einer Feder-drückmesser (4822 395 80028) an die gekennzeichnete Stelle zurückdrücken; Bild 2 Punkt F.
Im moment da sich die Andruckrolle löst, stoppt der Bandtransport; in diesem Augenblick soll das Meter abgelesen werden.
Dieser Druck kann nicht eingestellt werden. Feder 52 auswechseln, wenn der Federdruck nicht richtig ist.

**VL-Friktion 83**

Die Friktionskraft lässt sich mit einer Friktionsmesscassette (4822 395 30054) in Stellung "Play" messen.
Der Messwert soll betragen:
45 gcm auf der Aufwickelseite; zulässige Schwankung innerhalb dieser Werte 5 gcm;
2-8 gcm auf der Abwickelseite.
Die Friktionskraft wird durch die Rampen und Blattfedern bestimmt, Bild 1 (A und B).
Die Kraft ist einstellbar, indem die Blattfeder um einege Nocken verlagert wird.

**Kontrolle des Bandlaufs und der Tonwelleneinstellung**

Gerät mit einer Spiegelcassette (4822 395 30058) in Stellung "Play".
Wenn sich das Band an der Tonwelle nach oben oder nach unten bewegt, soll die Tonwelle mit dem Schwungradaxiallager 74 senkrecht eingestellt werden.
Das Band soll gerade und genau fluchtend zwischen den Bandführungen und an der Tonwelle entlang laufen.
Geringe Abweichungen in diesem Bild sind zulässig, da sie bei einer gewöhnlichen Cassette nicht beeinträchtigend wirken.

**Azimuteinstellung des A/W-Kopfes und Bandgeschwindigkeitseinstellung siehe das Manual dieses Geräts.**

(I)

## TRASPORTO NASTRO - FIG. 1

**— Sostituzione del rullo pressore 53**

Togliere la molla 52 e premere l'aletta di fissaggio.

**— Sostituzione della staffa supporto testina 58**

Togliere il rullo pressore 53.
Premere verso l'interno le linguette nella guida della posizione 58.
Tirare indietro leggermente la staffa e sollevarla, quindi, dalla parte posteriore.

**— Sostituzione dei pulsanti 64-66-67-68-69**

Togliere il rullo pressore 53.
Togliere la staffa supporto testine 58.
Togliere la staffa di fissaggio 59 (molla 61).
Il pulsante si sblocca premendo leggermente verso l'interno la relativa linguetta di fissaggio; in questo modo può ora essere tolto dal telaio.
Fare attenzione alla posizione 63.

**— Sostituzione delle molle di contatto 94, 96 del commutarore**

Queste due molle sono fissate ad incastro sul telaio. (Vedi parte inferiore del telaio).

## REGOLAZIONI E CONTROLLI

**Altezza della testina di registrazione-riproduzione K1 Fig. 1**

— Spegnere l'apparecchio.
— Far scorrere la dima 4822 402 60245 sul capstan spostando indietro leggermente il rullo pressore 53.
— La dima deve essere fatta scorrere sul capstan finchè non è allineata con le guide della testina di cancellazione.
— La testina di registrazione/riproduzione dovrà essere regolata in modo tale che la dima possa scorrere esattamente tra le guide delle due testine.

**Controllo della pressione del rullo - Fig. 2**

La pressione esercitata dal rullo 53 sul capstan dovrà essere 220 ± 50 grammi.
Per eseguire questa misura procedere nel modo seguente:
Inserire una cassetta qualsiasi e mettere l'apparecchio in posizione PLAY.
Usando il dinamometro 4822 398 80028, spingere indietro il rullo pressore fino al punto indicato in Fig. 2 (punto F).
Nel momento in cui il rullo pressore si disinserisce, il registratore si ferma.
La scala dello strumento deve essere letta in questo momento.
Non è prevista nessuna regolazione della pressione; pertanto, nell'eventualità di una pressione errata, sostituire la molla 52.

**Piattello frizione 83**

Con la cassetta di prova 4822 395 30054 è possibile misurare la frizione mettendo l'apparecchio in posizione PLAY.
La coppia della frizione dovrà essere compresa tra 45 gcm.
Questi valori possono avere una variazione di 5 gcm.
La controfrizione dovrà essere fra 2 e 8 gcm.
La coppia è determinata dalla parte superiore inclinata e dalle molle piatte, Figs 1 (A e B).
E'possibile regolare la coppia agganciando le molle piatte ad un altro gradino.

**Controllo del percorso nastro e regolazione del capstan.**

Inserire una cassetta specchio 4822 395 30058 e mettere l'apparecchio in posizione PLAY.
Quando il nastro fluttua, la perpendicolarità del capstan deve essere corretta regolando il supporto del volano 74 - vedi Fig. 1.
Il nastro dovrà scorrere diritto e senza attrito fra le guide ed il capstan.
Con questa cassetta campione si possono tollerare piccole fluttuazioni, poichè esse sono trascurabili in una cassetta normale.

**Per la regolazione dell'azimuth della testina di P/B e della velocità vedere il manuale relativo all'apparecchio.**

## (GB) MAINTENANCE

It is recommended to clean the recorder and to lubricate the principal lubrication points after approx. 500 hours of operation.

To be cleaned with alcohol or spirit:
- Erase head
- Recording/playback head
- Belts
- Capstan
- Pressure roller

## (NL) ONDERHOUD

Aanbevolen wordt het apparaat na ca. 500 bedrijfsuren schoon te maken en op de belangrijkste punten te smeren,

Schoonmaken met alcohol of spiritus:
- Wiskop
- Opneem-/weergeefkop
- Snaren
- Toonas
- Drukrol

## (F) ENTRETIEN

L'appareil devra être nettoyé après env. 500 heures de marche et lubrifié aux points les plus importants,

Nettoyer les éléments suivants à l'alcool ou à l'alcool à brûler:
- Tête effacement
- Tête enregistrement/reproduction
- Corroles
- Cabestan
- Galet presseur

## (D) WARTUNG

Es empfiehlt sich, das Gerät nach ca. 500 Betriebsstunden zu reinigen und die wichtigsten Schmierpunkte zu schmieren,

Reinigen mit Alkohol oder Spiritus:
- Löschkopf
- Aufnahme/Wiedergabe-kopf
- Antriebsriemen
- Tonachse
- Andruckrolle

## (I) MANUTENZIONE

E consigliabile pulire l'apparecchio dopo circa 500 ore di funzionamento e di lubrificarne i punti principali.

Pulire con alcool
- Testina di cancellazione
- Testina di registrazione/riproduzione
- Cinghie
- Cabstan
- Rullo preminastro

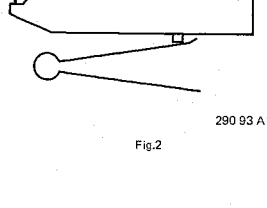


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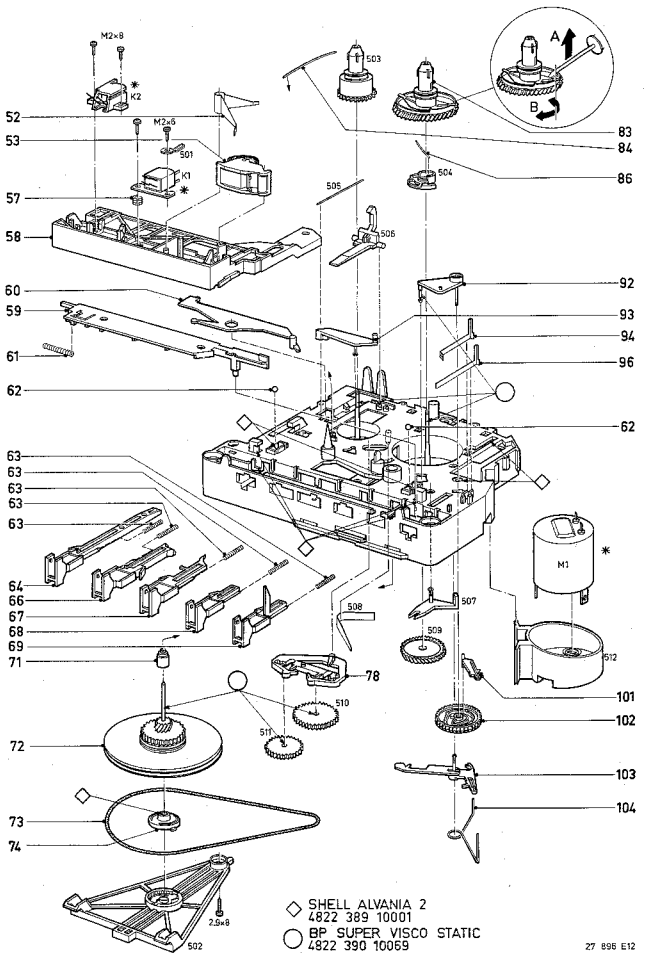
Fig.2

| | | | |
|---|---|---|---|
| 52 | 4822 492 40992 | 72 | 4822 528 60173 |
| 53 | 4822 528 70375 | 73 | 4822 358 30194 |
| 57 | 4822 492 51473 | 74 | 4822 528 20356 |
| 58 | 4822 466 80989 | 76 | 4822 464 50218 |
| 59 | 4822 403 51708 | 83 | 4822 691 20149 |
| 60 | 4822 403 51716 | 84 | 4822 492 62633 |
| 61 | 4822 492 51472 | 86 | 4822 492 62634 |
| 62 | 4822 520 40134 | 92 | 4822 403 51707 |
| 63 | 4822 492 51471 | 93 | 4822 403 51715 |
| 64 | 4822 403 51709 | 94 | 4822 492 62635 |
| 66 | 4822 403 51711 | 96 | 4822 492 62636 |
| 67 | 4822 403 51712 | 101 | 4822 403 51717 |
| 68 | 4822 403 51713 | 102 | 4822 466 80987 |
| 69 | 4822 403 51714 | 103 | 4822 403 51718 |
| 71 | 4822 520 30387 | 104 | 4822 492 40993 |


M2×8
K2
52
M2×6
53
501
K1
57
58
503
A
B
83
84
504
86
505
506
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68
69
71
M1
507
508
509
512
78
101
510
102
511
72
103
104
73
74
2,9×8
502
◇ SHELL ALVANIA 2
4822 389 10001
○ BP SUPER VISCO STATIC
4822 390 10069
27 896 E12
* FOR CODENUMBER SEE ELECTRICAL PARTSLIST
OF SERVICE MANUAL OF CONCERNING TYPE

Fig. 1

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(D)

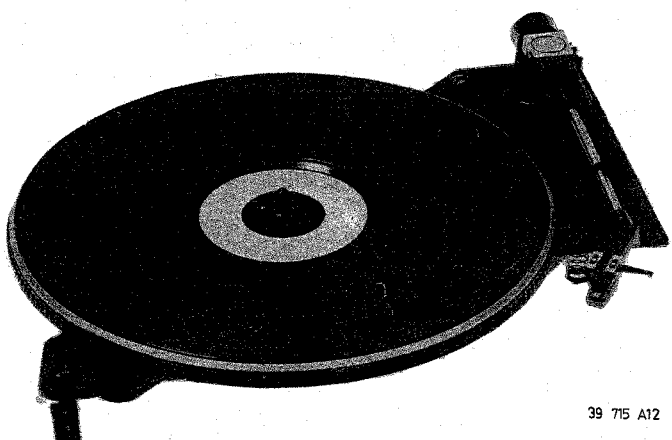
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Service
Service
Service

# Service Manual



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Wow and flutter :≤0,3 %
Automatic arm return
Belt drive

Safety regulations require that the set by restored to its original condition and that parts which are identical with those specified be used.

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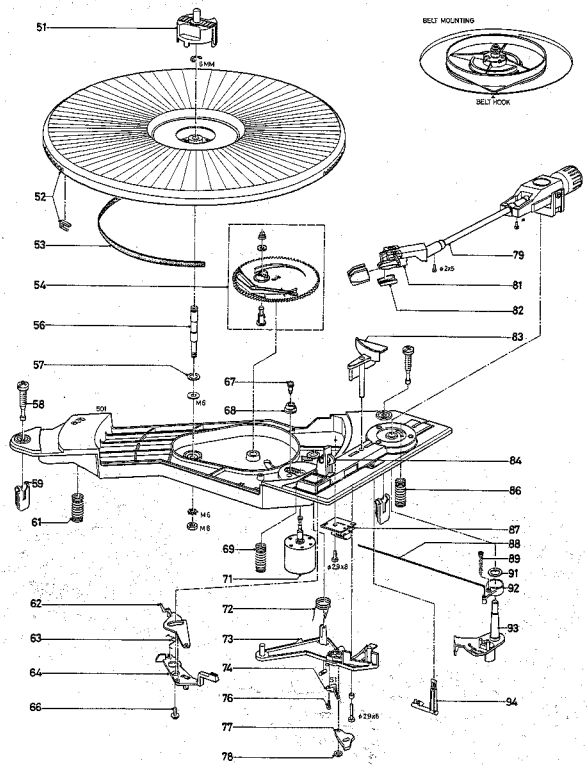


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 51 | 4822 535 60085 | 63 | 4822 492 41967 | 76 | 4822 502 12524 | 88 | 4822 535 91982 |
| 52 | 4822 528 10645 | 64 | 4822 402 50221 | 77 | 4822 402 50223 | 89 | 4822 492 63391 |
| 53 | 4822 358 30684 | 66 | 4822 502 12525 | 78 | 4822 530 70354 | 91 | 4822 532 51715 |
| 54 | 4822 522 20357 | 67 | 4822 503 90038 | 79 | 4822 251 70284 | 92 | 4822 402 30152 |
| 56 | 4822 535 60086 | 68 | 4822 532 51716 | 81 | 4822 251 30114 | 93 | 4822 402 30151 |
| 57 | 4822 532 51651 | 69 | 4822 492 51822 | 82 | 4822 251 40136 | 94 | 4822 402 61018 |
| 58 | 4822 502 12523 | 71 | 4822 361 20681 | 83 | 4822 402 50219 | | |
| 59 | 4822 401 10887 | 72 | 4822 492 41966 | 84 | 4822 402 61019 | | |
| 61 | 4822 492 51821 | 73 | 4822 402 61021 | 86 | 4822 492 51822 | | |
| 62 | 4822 402 50222 | 74 | 4822 277 60238 | 87 | 4822 214 51022 | | |

# Loudspeaker box 70FB260/30/30Z

Service
Service
Service

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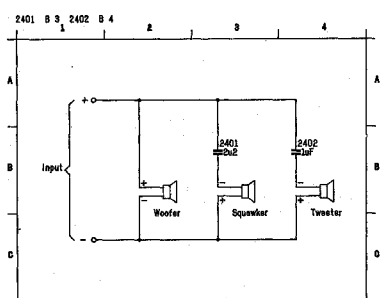
# Service Manual

**SPECIFICATIONS**

| | |
|---|---|
| Volume | : 16 l |
| Dimensions | : 493 x 266 x 197 mm |
| Rated impedance | : 8 ohm |
| PHC | : 30 W |
| Pmax. | : 60 W |
| Frequency range | : 50-20.000 Hz |
| Resonance frequency | : 40 and 102 Hz |

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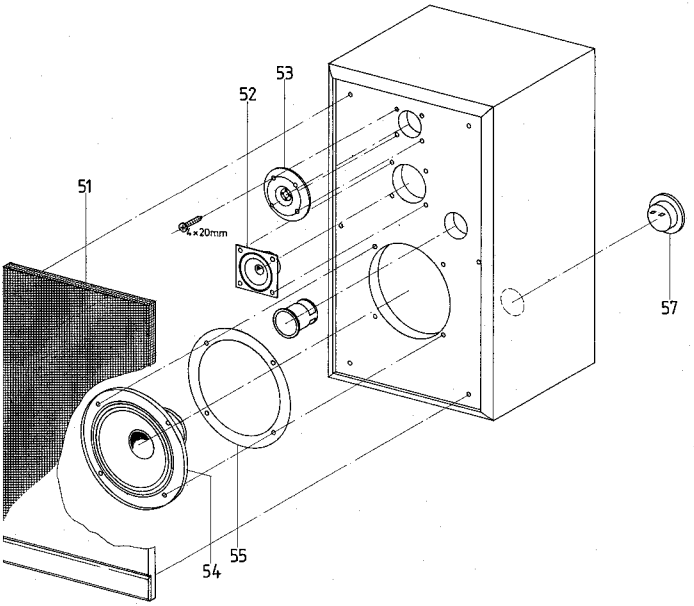


| | | |
|---|---|---|
| 51 | 4822 464 90553 |
| 52 | 4822 240 70208 |
| 53 | 4822 240 70209 |
| 54 | 4822 240 60307 |
| 55 | 4822 532 51092 |
| 57 | 4822 417 20165 |
| 2401 | 4822 124 21435 |
| 2402 | 4822 124 41737 |